MANUFACTURERS' RECORD

A WEEKLY SOUTHERN INDUSTRIAL, RAILROAD AND FINANCIAL NEWSPAPER

VOL. XLVI. NO. 16. WEEKLY. | BALTIMORE, NOVEMBER 3, 1904. | $4.00 A YEAR. SINGLE COPIES, 10 CENTS.

Manufacturers' Record.

PUBLISHED EVERY THURSDAY BY THE

MANUFACTURERS' RECORD PUBLISHING CO.

RICHARD H. EDMONDS, President.
THOMAS P. GRASTY, Vice-President.
FRANK GOULD, Secretary.
VICTOR H. POWER, Treasurer.

OFFICE: MANUFACTURERS' RECORD BUILDING, BALTIMORE.

RICHARD H. EDMONDS,
Editor and General Manager.

THOMAS P. GRASTY,
General Staff Correspondent.

SUBSCRIPTION, - - - - - $4 a Year.
TO FOREIGN COUNTRIES, - 26s. 6d. a Year.

BALTIMORE, NOVEMBER 3, 1904.

POWER OF PUBLICITY.

In reply to an offer of the Manufacturers' Record to make known through its Construction Department his plans for rebuilding a burned plant, a Florida business man writes:

My ice factory burned down on the 22d, and I intend to rebuild at once. But, for God's sake, don't tell anybody. I know just what I want and where to get it, and don't want to have to use a wagon to bring home my mail.

SOUTHERN RAILROAD MILEAGE.

Figures derived from Poor's Manual of Railroads for 1904 are the ready means of comparing the progress made in recent years in the South with that made in the rest of the country. The Manual enables one to study the growth between 1850, when railroading was only beginning in Mississippi, Tennessee, Kentucky, Louisiana and Florida, and was largely a matter of plans in Arkansas and Texas, and 1903. But comparisons of 1890, 1900 and 1903 will probably suffice. They are as follows:

States.	1890.	1900.	1903.
Maryland.....	1,270.04	1,339.34	1,368.18
Dis. of Columbia.	20.66	24.88	24.65
Virginia.....	3,359.65	3,789.58	3,852.62
West Virginia....	1,433.30	2,473.34	2,636.73
North Carolina..	3,128.17	3,737.53	3,824.47
South Carolina..	2,289.15	2,919.31	3,051.86
Georgia.....	4,600.80	5,729.91	6,121.16
Florida.....	2,489.52	3,255.71	3,725.69
Alabama.....	3,422.23	4,197.22	4,434.29
Mississippi.....	2,470.85	2,934.27	3,158.56
Tennessee.....	2,767.38	3,184.91	3,355.19
Kentucky.....	2,942.38	3,093.75	3,193.31
Louisiana.....	1,739.85	2,801.27	3,419.38
Arkansas.....	2,203.44	3,108.56	3,691.37
Texas.....	8,709.85	9,991.62	11,256.19
Total.....	42,847.24	52,581.29	57,113.65
United States....	166,703.36	194,262.23	207,603.53

Between 1890 and 1900 the mileage in the whole country increased 16.5 per cent. and in the South 22.7 per cent. In the next three years the increase was 6.8 per cent. in the whole country and 8.6 per cent. in the South. Between 1890 and 1903 the increase was 40,900 miles, or 24.6 per cent., in the whole country, and 14,119 miles, or 33.3 per cent., in the South. In 1890 the mileage of the South was 24 per cent. of the total in the country. By 1903 it had risen to 27 per cent. On December 31 last the mileage of Texas, 11,256, was second of the mileage of the several States, Illinois leading with 11,502, and Pennsylvania being third with 10,784 miles.

A MISSISSIPPI EXHIBIT.

The Mississippi Cotton and Corn Carnival to be held at Jackson in December promises to be a success beyond the thought of its original promoters. Its management has arranged with the Gulf & Ship Island Railroad for an exhibit of clays and other minerals, of timber resources, of farm products and of manufactures along its lines. The Southern Railway has promised a fine exhibit, in line with its long-recognized policy of furthering development in its territory, and other railroads may be expected to follow suit. The carnival, designed originally to show what Mississippi may do as a corn-grower, has already been made the chance for giving wide advertisement to the general agricultural and industrial possibilities of the State.

Advertisements of Southern localities offering special advantages for the location of manufacturing enterprises will be found on pages 72 and 73.

BALTIMORE'S CLEARINGS AHEAD OF 1903.

Ever since the great fire last February the manner in which the trade of Baltimore has been held together and preserved has been a subject of comment not only among residents of the city, but among visitors thereto, who, realizing the magnitude and multitude of disadvantages under which business has been conducted since the conflagration, found it surprising indeed that the falling off was comparatively little as compared with last year; in fact, with the exception of February, when the banks were closed for two weeks immediately following the disaster, the decline in bank clearings has been moderate as compared with last year, and as the months progressed there was a growing tendency to narrow the gap between the record of 1904 and that of the corresponding months of 1903, which was everywhere a remarkably prosperous year.

Now, however, the month of October just ended shows a total of bank clearings which outstrips the corresponding month of the last year, notwithstanding its notable records. Moreover, business has since the beginning of the fall trade been holding up remarkably well in Baltimore, the start being made with the month of August, when the clearings were only a few hundred thousand behind the record of 1903. September also was likewise less than a million behind, but October now places the city again in the lead of her previous record by several hundreds of thousands.

Wholesale business has been remarkably good in Baltimore this autumn, and one of the largest wholesale dry goods houses reports never having experienced such a busy season as this. Similar reports are heard in other lines of trade, and it indeed appears as if the fire had proved a stimulus to greater exertions which has worked what appears as almost a miracle when one considers the hampering conditions under which so many Baltimore merchants are conducting business. Results thus far have undoubtedly shown that the confidence felt and expressed in the abilty of the city to rapidly recover from the terrible blow which swept away millions upon millions of property and placed in seemingly inextricable confusion its commercial and financial affairs has been more than realized, and the present promise is such as to give a substantial foundation for the expectation and prediction that the near future will witness even greater progress than has been shown in the recent past.

THE MANUFACTURERS' RECORD AS A HARVEST FIELD.

"The great harvests" is the feature of the November issue of the World's Work of New York. Perhaps the most interesting of these harvests is the one gleaned for the World's Work from the columns of the Manufacturers' Record—interesting because the gleaning under the title "The Rich Kingdom of Cotton" makes absolutely no mention of the Manufacturers' Record. The gleaning proves that the mechanical cotton-picker so long desired has at last been invented, and emphasizes the value of the Manufacturers' Record to gifted young writers expert at using such a picker.

Two months ago the gifted young writer to whom is credited the World's Work's cotton harvest wrote to the Manufacturers' Record as follows:

Please send me without delay—in exchange for review notice—the copy of your pamphlet "The South's Supremacy in Cotton Growing." Also please advise me if you have any photographs illustrating the planting, cultivation and marketing of cotton, or where I could probably get some photographs of this sort for use in a magazine article I am writing.

The pamphlet, published last spring, was a reproduction, as is well known, of articles which had appeared in the Manufacturers' Record as early as last December. The letter asking for it was but a specimen of the almost daily drafts for material from the Manufacturers' Record by statesmen, philanthropists, orators and authors, some of whom occasionally thank the Manufacturers' Record for the material willingly furnished and acknowledge the source of their special information in products based upon it.

This particular product in the World's Work, a combination of a review and a magazine article, rather curiously omits any reference to the publications reviewed. Therefore a few features of the review should be mentioned. The looseness of the reviewing is suggested in the handling of a figure in the opening paragraph of "The Rich Kingdom of Cotton." There the novel proposition is advanced "even if either corn or wheat should grow no more, we could grow enough of the other, supplemented by rice, oats, barley, rye, peas, beans and the like, to feed both man and beast with comfort. But for cotton there is no substitute that can be cultivated cheaply on a large scale." There was redundancy in that. The truth appears in condensed form on page 29 of "The South's Supremacy in Cotton Growing," and reads as follows: "When the wheat crop or the corn crop is below the normal yield, in part at least, substitutes can be provided, but for cotton there is no substitute."

Elaboration of original thought in one instance is balanced by extreme condensation in another. In its issue of May 12 last the Manufacturers' Record in an editorial on "Cotton as the Dominant World-Industry" credited to a telegram received by request from Mr. James M. Swank figures of iron and steel production which enabled the Manufacturers' Record to estimate the total for the world at $1,700,000,000, that is, the total value of the product of "what may be called the primary form of the iron and steel industry." Those figures were compared in the editorial with the figures of the cotton industry, which "would give us a total value of the world's manufactured cotton product of over $2,000,000,000 a year." That editorial was a lengthy one, and its significant facts comparing cotton with iron and steel are condensed in the World's Work review in these words:

It is hardly too much to say that cotton is now the basis of a dominant industry of the world. In their primary forms iron and steel products represent a value of only $1,700,000,000 yearly, while the estimated value of the world's annual output of cotton goods is $2,000,000,000.

As one gets farther into the review one is convinced that it is hardly too much to say that original work on cotton appearing in the Manufacturers' Record is the basis of the dominant facts and thoughts of the World's Work article. The most potent evidence appears in a grouping in parallel columns earlier publications of the Manufacturers' Record and the thoughts in the World's Work, as follows:

[Manufacturers' Record.]

Mr. Atkinson regrets the impossibility of any material competition with the South as a cotton-grower within the next 50 years. But that regret does not weaken his conviction of the South's virtual monopoly. During the Civil War * * * Mr. Atkinson imported and spun samples of every type of cotton produced anywhere.

[World's Work.]

Mr. Edward Atkinson predicts that for 50 years to come the South will have a virtual monopoly of the world's cotton supply. During the Civil War Mr. Atkinson imported cotton from every foreign country now mentioned as a probable competitor of the South.

[Manufacturers' Record.]

The $800,000,000 received by the South for its cotton during the last five years in excess of what it received during the preceding five years is nearly twice as much as the entire capital invested in all the cotton mills of the United States in 1900.

[World's Work.]

For the last five crops the South has received nearly $800,000,000 more than for the preceding five crops—nearly twice as much money as is invested in all our American cotton mills.

In reviewing the Manufacturers' Record's statement the gifted young author

overlooked the fact that it was made in December, 1903, while he was writing for November, 1904, nearly a year later, and that the comparison with the capital invested in cotton mills dealt with the capital of 1900, and not the capital of 1904.

[Manufacturers' Record.]

The two periods of low prices—the one between 1839-40 and 1849-50 and the one between 1890-91 and 1901-1902—are the only periods in the history of cotton in the last 100 years when the average prices for a year went below 10 cents a pound, except for the two years stated. (The two years were 1851 and 1885.)

[World's Work.]

The price bids fair to remain near the 10-cent mark. Excepting the two periods 1840-50 and 1891-1901, it has never been less.

The inaccuracy of haste in reviewing, here revealed again, is shared by the World's Work's statement that by threshing unopened cotton bolls "in parts of Texas last year nearly $2,000,000 was added to the value of the crop," the accurate statement in the Manufacturers' Record being that by it "$2,000,000 were saved to growers in Northern Texas and in the Indian Territory."

[Manufacturers' Record.]

We are still shipping to Europe 60 per cent. of our raw cotton every year—almost as uneconomic as it would be to ship our iron ore instead of turning it into the finished product here.

[World's Work.]

We are still shipping 60 per cent. of our cotton to Europe—almost as uneconomic, as has been said, as it would be to ship our iron ore instead of turning it into the finished product here.

"As has been said!" What a flimsy salve for a gifted literary conscience! "As has been said!" And how much of the composite entitled "The Rich Kingdom of Cotton" had not been said before? "As has been said!" And is this special cotton harvest typical of World's Work labor-saving methods?

N. B.—The Manufacturers' Record has never published any of the cuts which fill 78 of the 187 inches of the World's Work review of its work.

P. S.—The Manufacturers' Record did not really care whether or not the pamphlet sent "in exchange for review notice" was reviewed. But last week, in a spirit of fatherly correction, the Manufacturers' Record wrote to the author of the World's Work article as follows:

For two months we had no reason to know that you had received our pamphlet "for review." But the November number of the World's Work has relieved our mind on that point. We write this to call your attention to the singular omission of mention of the Manufacturers' Record in your review of its publications.

In reply the Manufacturers' Record has received the following:

In my article as written I concluded with a quotation from Mr. Edmonds—as you will see from a reprint of my manuscript in next week's P. F.—but Editor Page said this paragraph—a very fine paragraph, he says—had been so often reprinted as to make its use inadvisable. I have never been busier than for the last two months, and this accounts for my failure to review the book.

Then the article in the World's Work was not intended to be a review after all. We stand corrected.

SOUTHERN MILLS AND THEIR OPERATIVES.

The Manufacturers' Record continues to receive tokens of the interest aroused by its recent exposition of the practical solicitude of cotton-mill managements in the South about the educational and material welfare of their operatives. Mr. C. L. Peirce of Columbus, Ga., secretary of the Eagle and Phenix Mills, supplements his interesting letter of a few weeks ago with another telling of the graded free schools open for full terms in Columbus, Phenix City and Girard, the last two towns situated just across the Chattahoochee river in Alabama. The employes of the Eagle and Phenix Mills live in these cities, and children have free access to all the schools, which include kindergartens, manual training and other lines of instruction, and an industrial school, and Mr. Peirce adds that his company is the largest single taxpayer for the support of these schools. He regards the showing made in the Manufacturers' Record as conclusive in character.

Mr. C. G. Adams, an official of the board of education of Newton county, Georgia, writing from Oxford, says that two cotton mills in the county are doing much for the education of the children of their employes, and they have spent during the past two years, supplemental to taxes, $1450 for teachers and buildings. Mr. Adams says that he does not believe that the presidents of the mills would allow any family to remain with them who did not send their children to school for at least a part of a term each year. And he thinks that if all mill men took the same interest in the education of their children there would be no need for any child-labor bill in Georgia.

Mr. C. B. Truitt, president of the Unity Cotton Mills of La Grange, Ga., writes to the Manufacturers' Record that when the mill was built three years ago the management erected a neat three-room schoolhouse and employed a principal and an assistant teacher, there being no public school in La Grange at the time. A year later, the city having instituted a public-school system with provision for branch schools at the mill villages, the mill turned over to the authorities its schoolhouse free of charge. The officers of the mill enforce a rule that all children of school age attend this school a certain number of months out of each year. Commenting upon some facts published by the Greensboro (N. C.) Telegram about provisions for schools in its vicinity, the Wilmington Messenger suggests that "the Guilford county people are not ground down by and oppressed by the curse of child labor in the factories," and "no doubt there are many children in these mill villages who have much better school advantages than they had before their parents left the farms and brought them to the mills."

Such comments are reinforced by descriptions of conditions in special mill towns like Pelzer, S. C., recently described in the Christian Index by Rev. D. W. Key, pastor of the Central Baptist Church of Greenville, S. C. In reply to a letter to the Manufacturers' Record commending his work in this direction, the Rev. Mr. Key writes:

I reciprocate the kind personal references, and could wish that editors and public men generally could see the mill towns and their conditions and opportunities for once through your eyes. It would greatly help the operatives themselves. The too common wail over the hard conditions of the mills as being exceptional serves to create the very hopelessness that is charged to environment. Any phase of industrial life can be degraded by berating it, losing all sight of the opportunities provided for the operatives and the stimulation towards self-help afforded by the mills. It seems to me a little singular that such altruism in educational, religious and social advantages supplied at the cotton mills of the South has been so little appreciated or praised by the Southern public. "It is better to praise the good than to rail at the ill" until there has been developed a constructive power that makes the heart of the railing good, a necessary step toward progress.

A truth for all would-be philanthropists to ponder.

VAGRANTS MUST MOVE ON.

In many localities in the South complaint is made about the inadequacy of the labor supply. Mobile importers say that they cannot get a sufficient number of competent hands to unload vessels. There is competition for help between cotton-growers and rice farmers of the Carolina coast. Cotton-planters of Mississippi have their agents in the cities seeking to secure cotton-pickers. There is a shortage of labor for farm, mill and public improvement work in Louisiana. Spasmodic efforts to overcome these difficulties are discovered in the employment in Texas and other States of Mexicans and Italians in the field and on construction work, while early last month five or six dozen men were brought in a body from Chicago to New Orleans to take the place of negro roustabouts in the latter city. The arrival of a steamer with 1000 immigrants the other day at New Orleans brought requests from many parts of Louisiana for hands in cane-cutting and cotton-picking.

In the meantime come demands from many quarters for an enforcement of laws designed to suppress vagrancy. The Memphis Commercial-Appeal says that want columns of newspapers are filled, high wages are offered, planters are calling for hands, steamboat men for roustabouts, housewives for servants, while the streets and corner saloons are thronged with the unemployed. The Birmingham News insists that the idle should be made to go to work on the streets if they will not work elsewhere, while the El Paso Times appeals to the city authorities to establish a rockpile and to put to work on it every man unable to prove that he is employed at honest labor or that he enjoys an income sufficient to support him in idleness. The cry against the vagrant is heard from North Carolina to Texas, in spite of stringent legislation recently in Georgia, Alabama and Mississippi, and in spite of laws in other States which, if enforced, would do much for the settlement of local labor problems. Public opinion in the South should demand that these laws be enforced, and at the same time should make it impossible for the vagrant in any form to be countenanced. Vagrancy is a drain upon the community in two main directions. The man able to work but not working has to be supported by some one. There is one waste. The man able to work and not working subtracts from the productive capacity of the community and is a block in the path of its healthy progress. He should be made to work or move on.

FOR IMMIGRATION.

The gathering at Birmingham on November 16 and 17 of the Southeastern Railway Land and Industrial Agents is expected to do much toward accelerating the movement of settlers to the South. The leading spirits of the organization have been active for years in Southern development, and are beginning to see the fruits of their sustained labors. Much, however, remains to be done. Many misconceptions about the South are to be removed. The spirit of co-operation by State authorities, commercial organizations and individuals is to be accentuated. In all of that the agents of the railways, guided by the experiences which contributed so much to the upbuilding of the West a generation ago, and enjoying greater opportunities than those of the pioneers of systematic immigration, may be expected to take the lead. But they must be sustained by everybody who would see the South supporting a population in proportion to its capabilities.

A BELATED CHICKEN COME TO ROOST.

The truth that chickens are bound to come home to roost has been signally illustrated recently in the columns of The State of Columbia, S. C. R. Beverley Herbert, after two months of work in England and Scotland for the recently organized and very effective department of agriculture, immigration and commerce of South Carolina, reported the following among his impressions:

I was surprised to find in my work in Scotland, and especially in the Lancashire district of England, that the South has been grossly misrepresented by newspaper and magazine articles first published in the United States. Whether or not these articles were published for the purpose of prejudicing emigrants against the South I am not prepared to say. Since, however, cotton-mill men in Massachusetts have publicly recommended that the Southern mills be fought by influencing labor against them, I think it reasonable to suppose that these articles were circulated for that purpose. The article which seems to have attracted the most attention was the Van Vorst article, whose author worked for a time in the Olympia Mill in Columbia, and then greatly misrepresented the conditions existing there. These self-styled philanthropists who write these articles seem never to think that, while preventing the much-needed labor from coming to the South, they at the same time influence hundreds of unemployed people in England and Scotland stay where they are rather than come to a country where they could greatly better their condition.

I tried to get the leading newspapers in every city I visited to publish a favorable account of South Carolina. In this I was sometimes successful, but in other instances the editor or chief reporter told me that the South had such a reputation that they were afraid to publish anything which would tend to induce emigrants to go there. They said they had read so many articles and accounts about the bad condition of labor in the South, and that never having even heard them denied, they presumed them to be true. They also told me that I might expect to be opposed by labor organizations wherever I went, for they had all been influenced against the South.

As a bit of coincidence this report of Mr. Herbert's, which he supplements with a defense of conditions in South Carolina mill towns, was published in the Columbia State. In November, 1902, the same paper, in an indignant criticism of Marie Van Vorst's article, said:

She came here last spring or winter and called at The State office with a letter of introduction from Mrs. Irene Ashby McFadyen, who had been making a tour of the South as a representative of Samuel Gompers, the president of the American Federation of Labor, with a view to arousing public sentiment against the employment of infant children in the cotton mills.

The State did not say, as it should have done, that Irene Ashby McFadyen, an agitating English woman, was represented to the South as a disinterested philanthropist, and that her relation to the socialistic propaganda of the American Federation of Labor was not especially emphasized at the time by the individuals who introduced her to kind-hearted Southern audiences misled by some of their own home newspapers. The State did not say that that propaganda as revealed in its efforts at legislation contemplated the prohibition of

labor for persons under 16 years of age, requiring a decided flight of fancy to be regarded as "infant children." The State's indignation did not obscure among clearheaded thinkers the significance of the fact that Marie Van Vorst, with the inerrancy of the movement of the magnetic needle to the pole, when she came to Columbia, brought to The State her letter of introduction from the representative of the socialistic propaganda. For the State, without the least intent, and without dreaming of the extent to which its efforts in a particular direction would be the inspiration to more general and farther-reaching efforts, was more responsible than any ten other newspapers of South Carolina for the unjustifiable agitation which furnished the fuel now discovered—and discovered through the columns of The State itself—to be reacting against the material interests of South Carolina. The State has been foremost in efforts to promote these interests, and it undoubtedly thought it was promoting them when it led in the crusade of a couple of years ago, in which it was so vigorously seconded by Gompers, McFadyen, Van Vorst, Hubbard, Murphy, "Cabell Carter," McKelway and others.

In all of that the honest motives of The State were apparent, in spite of its proneness to substitute vituperation for argument with those who would save it from making grievous mistakes, to the injury of the very persons it would benefit.

Mr. N. I. Mayes of Chattanooga, Tenn., writes as follows:

I appreciate the value of both your Southern Farm Magazine and the Manufacturers' Record as advertising mediums and faithful friends of this Southern country. That the South is entering upon an era of extraordinary development and prosperity that will astonish us all is evident, so that as a field for investment, for pleasant homes and for manufacturing it has no parallel.

A $1,350,000 Electric Plant.

Another big water-power-electrical plant in the South has been completed. It is that of the Atlanta Water & Electric Power Co., which has utilized the flow of Bull Sluice Shoals near Atlanta, Ga., and is now furnishing power to the Georgia Railway & Electric Co. for operating street railways, lighting and power plants. The company has expended $1,350,000. There are seven pairs of turbines used, each with a capacity of 2400 horse-power, direct connected to generators, each of 1500-kilowatt capacity. There are also two single turbines, each of 250 horse-power, direct connected to the exciters. The turbines are of the McCormick pattern, built by the S. Morgan Smith Company of York, Pa. The generators are all of Westinghouse build. F. W. Hadley, formerly of Messrs. Westinghouse, Church, Kerr & Co., is manager of the Atlanta Water & Electric Power Co.

A $700,000 Water-Power Plant.

One of the very important water-power-electrical plants at present in course of construction in the South is that of the Union Manufacturing & Power Co. of Union, S. C. The company's dam has been building since May, 1903, and will develop 8000 horse-power, which will be transmitted by electricity for furnishing power to railways and industrial plants at Union and in that vicinity. The plant will be completed and ready for operation in about three or four months, and will have cost about $700,000. G. E. Shand of Columbia, S. C., is the engineer in charge; the General Electric Co. of Schenectady, N. Y., is furnishing the electrical machinery, and the Stilwell-Bierce & Smith-Vaile Company of Dayton, Ohio, will furnish the water-wheels.

Reasons for New England's Industrial Growth—III.

[Special Correspondence Manufacturers' Record.]

Boston, Mass., October 31.

Mr. Edward Atkinson has told me he regrets the use I made of his name in my letter of last week in connection with the proposition that the cotton industry of New England might profitably have been dispensed with, and that it never has been so advantageous to the section as is generally supposed. While not receding from his position, Mr. Atkinson, much to my surprise, told me he had no desire to provoke a controversy on the subject, and had intended his conversation with me to be a personal talk rather than the basis of a public interview. He had merely wanted to emphasize the great danger the South is confronted with in the temptation to overbuild cotton mills, in the belief that they had been great money-makers in New England. That the contrary was true, he averred, might be demonstrated by anyone who would take the trouble to run down the whole list of cotton-mill owners in New England today. He would find almost an unbroken record of consolidation, reorganization, scaling down of capital and other changes indicative of failure to make money.

Since he has read the printed report of my interview with him in last week's Manufacturers' Record, Mr. Atkinson makes no serious objection except as to the use of the word iniquitous as applied to the tariff, stating that he could not have used that term, since so many honorable men have believed in and advocated a protective tariff.

Mr. Atkinson is outspoken against a protective tariff. He is far from being a mealy-mouthed man, and as I have seldom heard an opponent of the protective tariff speak of it as anything but iniquitous, the familiarity of the expression seems to have led me into error in Mr. Atkinson's case.

In no spirit of controversy, then, but at the suggestion of the editor of the Manufacturers' Record, who, in common with people generally, believes the cotton industry of itself, but doubly so in connection with other industries which have established themselves along with it, laid the foundation for a large part of New England's industrial activities of all kinds, and that therefore cotton mills are much to be esteemed by the South, I will record some facts I have encountered favorable to the proposition that the cotton mills and cognate industries have been of tremendous advantage to New England.

I showed in my letter of last week by what slow and painful processes the cotton industry got a foothold in New England, and that it was not until 1790 that a permanent beginning was made, at which time the Slater mill was started at Pawtucket with 70 spindles. Now, out of the more than a billion dollars invested in the textile industries in the United States, New England has considerably more than one-half of this amount—$760,000,000, in fact—and nearly $280,000,000 is invested in the manufacture of cotton goods and cotton small wares, whose annual products have a value of nearly $200,000,000. As all virtues are akin, so it is impossible for a people to develop along one industrial line without including many others. Unquestionably the manufacture of machinery, engines, tools and everything required in the equipment and operation of a cotton mill grew immediately and directly out of the establishment of the first small crude cotton mills in New England. We have seen that no machinery was permitted to be exported from England, so that everything used in America had necessarily to be constructed here. The consequence is that the Corliss, Green and Wheelock engine works came into existence, and that the Lowell machine shops, the Drapers and many other big plants gradually developed out of the demand for machinery created by the cotton mills and other textile industries here and elsewhere, until all New England has become a veritable hive of industry.

While it may not be accurate to credit the cotton mill with all the industrial development of New England, yet it is a palpable impossibility for anyone to say just what that influence has been. We do know that whole towns, flourishing cities today, have been founded on the cotton mill as the prime factor; that vast fortunes have been built up in the cotton-mill business that are still intact, and furthermore, that all of this money was created in New England. The amount coming from the outside has always been insignificant, for not only has New England planted and harvested the dollars she has used, but she has raised such a fruitful crop that, as all the world is aware, New England capital has supplied the mainspring for a large part of the development that the rest of the United States has seen—particularly so as applied to whole sections of the West and Northwest.

Fall River, so largely a cotton-factory town, furnishes numerous interesting figures in this connection. With some 60 textile institutions, largely engaged in the manufacture of various forms of cotton goods, and which aggregate a capitalization of some $28,000,000, it is stated that nearly all of this development has come from within, and represents the profits which have been made on local industries, invested and reinvested over and over. Lowell, Lawrence and many other Massachusetts and Northern New England towns like Nashua, Manchester, Bridgeport and Lewistown, have each and all owed their development to outside capital, chiefly of Boston merchants, invested in water-powers, buildings and machinery, and Boston men today largely own and manage many of the important mills in those places. But Fall River men and Fall River money have almost exclusively brought about the development in that city and are in control of the properties today. Now, Fall River cotton-mill men have certainly been hit hard during the past year. There have been strikes and lockouts, and at the present time the operatives have been out for 14 weeks. Yet I find in the papers notices of dividends having been declared by the Fall River mills—in some cases only a quarterly dividend of 1 per cent., it is true, but no wheels have turned within the last quarter, so there must have been an accumulated surplus of some proportions—and the quotations of stocks show a premium of $10 to $30 a share in a number of the most heavily capitalized companies.

It is significant in this connection that not only have the Fall River people gone heavily into cotton manufacturing, but the testimony shows that they have done so willingly, gladly and even with vast enthusiasm. Cotton manufacturing is no latter-day fad in that town, for 80 years ago Holden Borden was running a 9000-spindle mill there, an undertaking of large proportions in those days, when 3000 spindles was regarded as big. And the Borden interests have been pre-eminent in cotton-milling in Fall River from that day to this. The Fall River Iron Works was a Borden enterprise, and once did a large business in the manufacture of iron hoops for binding oil casks. Presumably because the cotton industry was found to be more profitable, this company has wholly abandoned iron-working of every sort, and is now the biggest cotton factory in the country, with 370,000 spindles and 10,000 looms, and a modest capitalization of $2,000,000. So late as 1870 and 1872 there was a regular boom in cotton-factory construction in Fall River, and in those two years 14 new cotton factories were organized there, the shares of which were frequently put on the market with a premium bid. There may have been excessive zeal manifested at that time, but the facts that some 60 factories still abide, that the shares of many of them are above par, and that dividends are being paid after nearly four months of idleness and after a year of confessedly hard sledding for factories, on account of the high price of raw cotton, appear to indicate that the cotton-mill business of New England is far from being anything like a graveyard for dollars dead and gone. Certainly in Fall River they stick to the business with more devotion than any Yankee I ever heard accused of bestowing on a losing investment, and they surely have had opportunity of finding out every hook and crook, branch and detail of the cotton business in Fall River by this time.

I take Fall River because it is the greatest cotton-mill center of New England, and because it would seem all the bad features of the business ought to have developed strongly there. And yet I fail to find any general propositions on the part of the cotton-mill men to move away or go into other business.

As to the people of the town, who must be largely operatives, the savings banks' reports give some very interesting information. True, the reports at hand are for the year ending October 31, 1903, and the experiences of the past year may put a somewhat different phase on affairs. But assuming the figures available to give a normal view, let us consider them. Fall River has a population, so the reports state, of about 105,000. There are four savings banks there, with a total of open accounts footing up 46,269 in number. The total assets of these banks amount to about $22,600,000, with deposits of nearly $20,000,000. The Massachusetts laws are very strict regarding the loaning of savings, and only certain designated bonds, stocks and public funds may be accepted as collateral for loans or for investment. A provision is made, however, that with specified restrictions funds may be loaned to individuals, citizens of Massachusetts, with two solvent indorsers, also citizens. The result of this provision is that mill-owners are not infrequent borrowers of these funds, more than $5,000,000 appearing under the heading of loans on personal security in the reports of the Fall River savings banks. This means practically that 46,000 of the working people of Fall River are capitalists to the extent of loaning money to their employers with which to carry on business.

This matter of the savings banks of Massachusetts, by the way, is interesting all the way through. The total deposits of all the savings banks of Massachusetts footed up about $608,500,000 October 31, 1903, while on September 30, 1903, the capital stock of all the national banks in the entire United States was only $753,700,000. In all of Massachusetts the loans on personal security by savings banks amounted to $121,250,000 in round numbers, and a very large part of this has undoubtedly been employed by industrial institutions to carry on and extend their business. The total assets of the Massachusetts savings banks footed up about $649,500,000, and less than $9,000,000 was represented in real estate used for banking purposes, furniture and fixtures, expense account, etc. In other words, there were invested in public funds, bank

stocks, railroad and street-railway bonds and stocks, and loaned on real estate and personal securities over $640,000,000 of the money of the working people of Massachusetts.

I believe that the industries of New England, and particularly the textiles, are too firmly intrenched to be even forcibly removed, let alone relinquished of the people's own volition. The struggle has been too long a one, and the idea is too deeply ingrained in the very fiber of the people's being. They know the devastating void that would occur were the cotton mills to be removed, with all the mechanical institutions that must go with them, and with the exodus of skilled mechanics as well as operatives that would follow. The voice of the people may well be heard in the recent declaration of the manufactures committee of the State Board of Trade: "No section of our country, however favored by nature or improved by human agency, can rob New England of the genius, skill and ambition possessed by her sons and daughters." The foundations of industrial New England were deeply laid in the long gone past. From the earliest colonial times the colonial and town governments exercised a patriarchal supervision and commanded every family to engage in textile manufacture. So early as 1642 the general court passed an act having for its object the "training of children in learning and labor," said to be the first effort on record where a State made provision for textile education. In the early days every New England man was his own weaver, and every household constituted itself an industrial institution. With the invention of machinery and the introduction of the factory the State or community frequently made a donation of public funds for the benefit of a new enterprise.

Following the War of 1812 there came a strong demand for a protective tariff, and some exceedingly interesting and illuminating testimony as to the original and changed attitude of Boston merchants is furnished in a letter written by Abbott Lawrence to Hon. W. C. Rives of North Carolina, after the tariff of 1824 had gone into operation. There had been a great meeting at old Faneuil Hall in 1820, in which Nathan Appleton and Abbott Lawrence were participants, and which was addressed by Daniel Webster, among others, when the voice of Boston, as a commercial city, was raised in protest against any increase in the duty on imports. Here is what Mr. Lawrence had to record later on:

"Previous to the War of 1812 we were an agricultural and navigating people. The American system was forced upon us, and was adopted for the purpose of creating a home market for the products of the soil of the South and West. We resisted the adoption of a system we honestly believed would greatly injure our navigation and drive us from our accustomed employments into a business we did not understand. We came into it, however reluctantly, and soon learned that with the transfer of our capital we acquired skill and knowledge in the use of it, and that so far from our foreign commerce being diminished, it was increased, and that our domestic tonnage and commerce were very soon more than quadrupled. The illustrations were so striking in every department of labor that those who 15 years ago were the strongest opponents of the protective tariff among us have given up their theories and acknowledge that the revelations are such as to satisfy the most skeptical. We have gone forward steadily till every description of manufactures are as well settled in New England as the raising of potatoes."

I have talked with editors of textile papers here and with men whose interests are clearly identified with the cotton and other textile industries, and I am convinced that the overwhelming sentiment in New England coincides with the view that New England owes much to her cotton mills; that they have not only served her well in the past, but are a present source of great financial, commercial and industrial advantage, and that any suggestion of their elimination would summon an army in their defense.

Discussing this question of the value of the cotton-mill industry to the prosperity of New England, Mr. Joseph H. Hoadley, president of the International Power Co., takes very decided issue with Mr. Atkinson's views. As the International Power Co. owns the Corliss Engine Works of Providence, the American Wheelock Engine Works of Worcester, the Green engine, the Amoskeag Fire-Engine Works of Manchester, the ordnance plant at Bridgeport, and manufactures the Diesel engine and many other things, Mr. Hoadley is in a position to speak advisedly, for probably no man touches the industrial life of New England more closely than Mr. Hoadley, for, in addition to these enterprises, he and his associates formerly owned the Rhode Island Locomotive Works and the Manchester (N. H.) Locomotive Works, which were put into the American Locomotive Co. when he organized that. Discussing this question, Mr. Hoadley says:

"With an investment in its textile industry of $500,000,000, the transference of the cotton-mill business from New England to the South, or its gradual decay under Southern competition, would be a far-reaching disaster. It would mean not only the transference from New England to the South of this vast capital, but likewise the transference of the operatives, and following the cotton mills would go the engine works, textile-machinery plants, bleacheries, dye works and other great industries which have been built up around the cotton-mill business. The building of engines, such as the Corliss, the Wheelock and others, so largely used in cotton mills North and South; the making of textile machinery, which is one of the foremost industries of New England, employing vast capital and many thousands of skilled hands, would all necessarily sooner or later have to be concentrated in the center of the cotton-mill industry should New England permit the loss of its cotton trade. The ability to secure skilled labor in New England is in part due to the fact that while the men are working in machine shops and engine plants, other members of their families find profitable employment in textile and kindred industries. Take from the boys and girls and the women the opportunity of employment in the textile business and in the industries which center around cotton manufacturing, and New England would to a large extent lose its hold upon a great body of skilled mechanics, and they would follow with the southward trend of the cotton mill."

"Interested, as I am," added Mr. Hoadley, "in so many industrial enterprises throughout New England requiring some thousands of skilled mechanics, I know from close personal study of the situation that Mr. Atkinson's views are radically wrong when he undertakes to suggest that the textile industry is not a vital factor in the future of New England's business life. Of the thousands of men employed in our various works, there are very few who would not be seriously injured by the loss of work of relatives or members of their families should cotton manufacturing leave New England. It is quite possible that the wonderful advance of the South will necessitate our building large works in that section to take care of our Southern trade, but I am distinctly opposed to Mr. Atkinson's theory that cotton manufacturing is not essential to New England's prosperity, and in this position I am sure that I am but voicing the views of nearly every great financial or industrial leader in New England.

ALBERT PHENIS.

MINERALS OF ALABAMA.

By JOHN SHARSHALL GRASTY, Johns Hopkins University.

[Written for the Manufacturers' Record.]

The State of Alabama, ranking second in the Union as a coke-producing State, third in the production of iron ore and fifth as a producer of coal, might well be expected to have one of the most creditable mineral exhibits in the Mines and Metallurgy Building at the St. Louis Exposition. But as a matter of fact, Alabama, with all its great mineral resources, has no exhibit of its mineral wealth in the sense that the State authorities collected the materials for it and installed it at the State's expense. The exhibit known as the Alabama exhibit was gotten up and installed without the cost of one cent to the State.

When it was seen that the State was not going to appropriate the money for a mineral exhibit, the Commercial Club of Birmingham took the matter up, and it is due entirely to the energy and enterprise of this organization that Alabama coal, coke, iron, bauxite, ceramic and cement materials are today on exhibition at St. Louis.

Even the Commercial Club, however, might not have furnished the State with an exhibit free of all cost but for the idea of one of its members, Mr. J. A. Macknight, who conceived the notion of typifying in a colossal iron statue of Vulcan the industry which has done most to give the State of Alabama its present commanding position in the industrial world. Though it required several months to get the Club thoroughly interested in the scheme, Mr. Macknight's efforts were at last crowned with success and the statue was finally built at a cost of $20,000.

This statue of Vulcan rises to a height of 56 feet and weighs 60 tons. It was designed by G. Moretti, the noted New York sculptor, and it stands in the center of the Alabama exhibit, with its feet planted deep in coal, coke, hematite and limestone—the stuff that made it. It represents the primitive man at the time he discovered the process of converting iron into steel. He holds aloft as the first result of his handiwork and knowledge a finished spearhead, while in his left hand he holds an immense hammer that rests on the massive anvil upon which, the inference is, the spear was fashioned. This statue is the largest statue that was ever cast, and can be seen from any part of the Mines and Metallurgy Building. It makes the Alabama exhibit the most conspicuous one in the building.

The Alabama exhibit consists chiefly of the raw and finished products of the industries devoted to iron and steel making in or near Birmingham. At the northeast corner of the enclosure is a pavilion built of the iron-making materials used in the furnaces of the Republic Iron & Steel Co. of Birmingham. The roof of the building is thatched with coke and the cornices consist of alternating blocks of coal and red hematite. Within the pavilion are the finished products of the company. These range from pig-iron to rods, plates, bars and angles. A similar pavilion is located at the southeastern corner of the Alabama space, and this is used as an office by the representative of the Commercial Club. The exhibit is enclosed on the north and south sides by sewer pipe made by the Southern Sewer Pipe Co.

The following are the companies having exhibits within the enclosure: The Sloss-Sheffield Steel & Iron Co.'s exhibit consists of Sloss pig-iron, the pig-iron from which the statue of Vulcan was cast, Sloss soft and hard iron ore, coal and coke. The Tennessee Coal, Iron & Railroad Co. exhibits steel rails made by the open-hearth method and the materials used in the manufacture of iron, i. e., coke, iron ore and limestone.

The Pratt Coal & Coke Co. and the Alabama Consolidated Coal & Iron Co. also make displays of their raw and finished products. In short, aside from the materials used in the manufacture of Portland cement and a number of fine clays and ochres and bauxite, which were contributed by the Alabama Geological Survey, the exhibit gotten up by the Commercial Club is, as might be expected, in every sense commercial. There is a faint suggestion of the scientific, however, as the State survey has a representative at the exhibit, and the expense of keeping him there is borne in part by the Commercial Club. The survey's representative has charge of the survey publications, and also makes it his business to inform those who care to know of the mineral resources of the State.

The Commercial Club deserves the highest praise for the work that it has done in providing the State of Alabama with an exhibit; but the exhibit it has gotten up falls far short of truly representing and adequately advertising the mineral resources of the State of Alabama. This, however, is not the fault of the Club, but it is a grievous sin of omission that must be charged to the shortsighted legislature which failed to provide the funds for collecting, installing and maintaining an exhibit worthy of the State's resources. Had the State voted the necessary funds and put a scientific man like Dr. Smith, the State geologist, in charge of collecting and installing an exhibit, Alabama would have, with the co-operation of the Commercial Club, the ideal exhibit—one which combined the commercial, scientific and spectacular, without unduly accentuating any one of the three. $50,000 or $100,000 would not have been too much for Alabama to have spent in advertising by means of a suitable exhibit. Neglecting to do so has cost the State thousands of dollars.

That Alabama did not provide for an exhibit of the State's mineral wealth is all the more surprising and inexplicable when it is remembered that the people of Alabama have long realized the value of a State geological survey, and have supported the survey because it offered the best means of exploiting the mineral wealth of the State. This statement is borne out by the history of the State survey.

Since 1847, with the exception of the period from 1857 to 1868, the geology of Alabama has been systematically studied by both the late Professor Toumey and Professor Smith of the University of Alabama, and during these years a vast amount of valuable information has been collected which would have been of inestimable value in getting and installing a State exhibit at St. Louis. In 1847 the first systematic examination of the geology of Alabama was instituted.

In the year 1847 Professor Toumey received the appointment to the professorship of geology in the University of Alabama, and it was made part of his duty to spend a portion of his time, not exceeding

four months in each year, studying the geological phenomena of the State. Not until 1848, however, was he made State geologist. He received this appointment in recognition of the work he had done during the previous year. Thus it happened that the first geological survey of the State was begun. From 1848 to 1853 Professor Toumey continued his explorations, but at the expense of the university, for during this time no appropriation was made by the State. In 1849 he presented the legislature with his first geological report, and this was published in 1850.

The first legislative act appropriating money for the support of the State Geological Survey was passed in 1854. By this act $10,000 was voted for the maintenance of the survey and an additional $2500 per annum for the salary of the State geologist. Professor Toumey was continued in office, and in order to devote all his time to the work of the survey he resigned his professorship at the State University. For two years he devoted his time exclusively to the service of the State, but at the end of this time the appropriation was exhausted, and not being renewed, Professor Toumey resumed his professorship at the university. The results of the reconnoissance was, however, not published until 1858, the year after his death. Even after the appropriation for the survey became exhausted Professor Toumey continued his field work, but after his death in 1857 the survey was discontinued.

From 1868 to 1873 very little was added to the geological knowledge of the State. During these years a number of small pamphlets were issued by the commissioner of industrial resources. In 1873, however, Dr. Eugene A. Smith was appointed State geologist, and the work was taken up where it ended because of Professor Toumey's death.

The State legislature appropriated $500 per annum for the expenses of the survey and $3000 for fitting up a chemical laboratory. From 1873 to 1882, inclusive, Dr. Smith devoted the greater part of each summer to survey, and in this he was assisted by some of his students at the university, but during this period of nearly 10 years he received no compensation from the State for his services. Four annual and three biennial reports were issued during this time. The maps of Walker, Fayette, Marion and Winston counties, which were published in 1877-78, called attention to the Warrior coal field, which up to this time was comparatively unknown. It is undoubtedly due to Dr. Smith that this rich coal field witnessed the marvelous development of the next few years.

A great deal was added to the knowledge of geology during the first decade of Dr. Smith's directorship of the survey, and some of this, as we have seen, was of great economic value. This long period of preliminary work furnished the basis for the still greater advances of the next 10 years. Every county of the State was visited during this time, and the State geologist thus became familiar in a general way with all the geology of the State and got acquainted with the needs of various sections. The development of the great resources of the State, however, and a demand for much more detailed and special information made it necessary more money be appropriated in order that the work might be carried on properly. Accordingly, a bill was passed in 1883 appropriating $5000 per annum for 10 years, but before the expiration of this time it was increased to $7500. This increase was made in 1891, and the appropriation has been kept at this figure since then. An arrangement was made about the same time that the reports of the survey should be published with surplus money left in the State treasury after other appropriations had been made, thus leaving the annual appropriation intact for defraying other expenses.

The increase in the value of property owing to the development of the mineral wealth of the State has reduced the tax rate 50 per cent. since the organization of the State survey, but just how much this development is due to the survey it is, of course, difficult to say. The survey, however, has without a doubt played an important part in the mineral development of the State. It called attention to rich coal and iron deposits of the State at a time when they were practically untouched by the pick of the miner. These regions have since seen enormous development. Only very recently attention was called to the existence within the coal measures of certain areas hitherto untouched in which the mining of coal would undoubtedly be profitable. The survey also has pointed out as a source of wealth the phosphate rocks in certain sections of the State; it has demonstrated the fact that certain clays of the State are well adapted for the manufacture of fine porcelain ware, fire-brick, tiles and other articles; it has pointed out localities where good marbles and building stones may be had for the quarrying. The existence of the large cement plant at Demopolis is due directly to an article written by the State geologists some years ago on the cement resources of the State. Its reports are invaluable to the student of the geology of Alabama, as well as to the investor contemplating buying mineral lands within the boundaries of the State. Nowhere can more complete information be obtained as to the coal, iron, bauxite, clays, cement materials, etc., of the State and their occurrences than in these publications.

The portion of Alabama which is best known and is known the world over is the so-called Birmingham district. In this mineral district, of which so much has been published, not only by the State survey, but by the United States Geological Survey, Birmingham is the center. Coal, iron ore and limestone are found here within a radius of a few miles, and often within a few feet of one another. It is the proximity of the mountains of coal and of iron and of limestone and dolomite, which occur in inexhaustible quantities, that makes Birmingham one of the greatest iron-making centers of the world.

The chief iron ores of Alabama in the order of their economic importance are (1) the red ore or hematite, (2) the brown ore or limonite, (3) the gray ore or magnetite, and (4) the black bond and clay-iron stone. Only the first two, however, have been mined on a large scale, and these are used in making pig-iron for foundries, mills and pipe works, and basic iron for open-hearth steel works. Large deposits of gray ore, however, have recently been developed which will doubtless in the near future tend to extensive miinng of this ore, which up to a short time ago was considered of minor importance. The high phosphorus content of the Alabama iron ores make it unsuitable for the making of Bessemer steel.

The red ore or hematite occurs in Alabama in several geological formations, but it is only in the Upper Silurian that it is in sufficient quantity to be of great commercial value. This, the Red mountain or Clinton ore, or, as it is otherwise known as Dyestone ore, fossiliferous ore, oolitic ore, etc., is the most important ore in the State. This is due to its occurrence in great quantity, the low cost with which it may be mined, its reliability and its close proximity to the coal and stone used in the manufacture of iron. In 1902 the output of hematite was 2,565,635 long tons, making about 72 per cent. of the iron-ore products of the State. This ore occurs normally on each side of the anticlinal valleys which separate the coal areas from each other, and are distinguished as East Red Mountain and West Red Mountain. The two deposits mentioned are the chief occurrences in the Birmingham district. A portion of the ore in these is, however, in places highly siliceous, but this difficulty can be and is overcome by magnetic concentration.

The brown ore is seldom used alone, the practice being to mix it with the hematite in proportions determined by the quality of iron desired. Its usual mode of occurrence is in irregular masses of concretionary origin in the residual clays resulting from the decomposition of limestones, and as a consequence the mining is uncertain and at times expensive. Alabama leads in the production of this ore, with an output in 1902 of 1,008,839 long tons.

The great Appalachian coal field terminates in Alabama, and embraces an area in Alabama of about 8800 square miles. This ore is divided into three districts, named, from the streams that drain them, the Warrior, the Coosa and the Cahaba. The Warrior field, to which, as stated, the survey called attention many years ago, has an estimated area of 7800 square miles, and is nearly ten times the area of the other two. The relatively greater importance of this field is also due to the vast amount of coal that can be economically mined within its limits, the coal seams outcropping over great areas and with a very moderate angle and dip. All the fields are similar with respect to their dip, which is in general to the southwest. The Cahaba field lies to the east of the Warrior, and ranks next to it in importance. The lease important and least known of the three fields is the Coosa coal field, which is also the smallest, with an area of about 300 square miles.

Of relatively minor importance, but of more or less economic value, are the gold ores of the State. In certain sections of the State this occurs in sufficient quantity to be worked with profit by the cyanide process. There are also deposits of copper, iron pyrites, graphite, mica, corundum, asbestos, slates, bauxites, galena, mineral paints, tripoli, nitrates and phosphates, but as yet none of these deposits have assumed great economic importance, due, perhaps, that they have never been fully developed. The clay and cement materials, however, bid fair to furnish the material for industries that will rival that of iron-making. Enormous quantities of clays suitable for making all varieties of ceramics are widely distributed throughout the State, and the cement industry, which even now is a growing industry, will receive a tremendous stimulus when the work on the isthmian canal is commenced. The advantage of location, cheap labor, cheap fuel and cheap water transportation gives this industry a great advantage of all possible competitors.

A PHASE OF SOUTHERN EDUCATIONISM.

[Written for the Manufacturers' Record.]

April 13 next, the anniversary of Thomas Jefferson's birth, has been selected as the date of the formal inauguration of Dr. Edwin A. Alderman as president of the University of Virginia. Therefore, one may reasonably believe that the annual Ogden Movement for the democratization and enlightenment of the South will start from its New York headquarters a week earlier than usual. For the presidency of the University of Virginia and Ogdenism are cheek by jowl. And thereby hangs an interesting tale involving a proposed endowment.

One of the principal backers of Ogdenism is the New York Tribune. Hot upon the election of Dr. Alderman to the presidency of the university came the Tribune's announcement that it was a triumph for Ogdenism. It said:

"To the public in general the chief significance of this selection is that it links the University of Virginia, with all its traditions and its powerful influence on Southern thought, with the movement for the democratization of education. * * * It is fitting that the university founded by that firm believer in universal education, Thomas Jefferson, should thus show devotion to the ideal of its founder, despite the cloud of prejudice and the practical difficulties in the way of popular teaching in the South. * * * More enlightened views are spreading, and this emphatic expression by the University of Virginia of confidence in a leader in the battle for universal enlightenment cannot fail to have great influence for good."

Other significance in the selection lay in the statement of a Virginia newspaper quite close to those who had made the selection, which, expressing satisfaction at that act, added:

"It is to be hoped that President Alderman will be able to attract donations which will give this institution an endowment that will place it on a footing of equality with similar institutions in other States and greatly extend the sphere of its usefulness in the cause of education and progressive science. * * * The university has accomplished wonders with limited means. What could it not do with an endowment of $10,000,000. Let us hope that such an endowment will yet be forthcoming. The man who would make such a donation would forever link his name with that of the immortal Jefferson, the greatest statesman that this country has yet produced."

Perhaps Thomas Jefferson's memory might be considered in plans to link his name with that of anybody so long as the latter comes up with $10,000,000. Be that as it may, there was awful enticement for an Andrew Carnegie in that last sentence, the opportunity to have his name linked with the greatest statesman that the country has produced, and all for the insignificant sum of $10,000,000, an amount equal to his endowment for the discovery of the exceptional man. But a Carnegie would want all the glory. His exclusive philanthropy would rob a big endowment of the university, following the election of Dr. Alderman, of the effect desired by Ogdenism, unless the donation should be made through Ogdenism's "clearing-house of philanthropy."

Hence, the eleemosynary suggestion in the Virginia newspaper must be regarded as a sort of voice crying in the wilderness, in preparation for a plan of endowment which emerged about the time of the acceptance by Dr. Alderman of the presidency of the university. Before that time there had been some thought of an endowment under alumni auspices, but as introduced the plan had upon it the graft of Ogdenism.

Broadly speaking, it contemplates the enlistment of the names of a selected number of representative Southerners for use in a circular commendation of the endowment plan. These names are to be known as the advisory council of the movement, and it is understood that their owners will be required to do nothing beyond allowing the use of their names by the organization having the matter in hand.

It is almost inconceivable that the head of this organization, a native of Virginia and once a resident of that Commonwealth, those who may be induced to have their names used as the advisory

council, and even most of those who have already lent their names to the plan, fully realize the possibilities in its success, possibilities of their earnest aim miscarrying woefully, of zeal outrunning prudence. From them, as well as from many alumni and other friends of the Universiay of Virginia, may, therefore, be expected misunderstanding of critics of the plan who are acquainted with details of the history of Ogdenism, and, therefore, are forced by ordinary common sense to look a gift-horse in the mouth—critics inspired only with reverence for the university and with disinterested desire that its traditions be maintained in all their influential purity.

It is understood that Dr. Daniel C. Gilman, late president of the Johns Hopkins University, retiring president of the Carnegie Institution, trustee of the Peabody Fund, accoucher and trustee of the Slater Fund, suggested the plan. Dr. Gilman is an expert in getting in touch with large endowments for education. He was one of the incorporators of the General Education Board, the fiscal agent of Ogdenism "to promote education within the United States of America without distinction of race, sex or creed," and fired with the ambitious purpose of being the "clearing-house for philanthropy," disposed toward education in the South. Included in those names is, of course, that of the venerable Andrew D. White, whose most recent contribution to "education," save his service for the Carnegie Institution, was his proposition that the trifling sum of $12,000,000 or $14,000,000 be given by some philanthropist for the purpose of insuring by endowment the activity of a greater number of scholars in American politics. Then there are the names of Wayne MacVeagh, Edward D. White and Dr. S. Weir Mitchell, other trustees of the Carnegie Institution. Ties in diplomacy are represented in the name of John W. Foster, ex-Secretary of State, and Richard Olney, who was Secretary of State at the time of the Venezuelan muddle. Associations of the Peabody and Slater trustees are recalled in the names of Chief Justice Melville W. Fuller and Morris K. Jesup, and literary and journalistic influence in the names of Hamilton W. Mabie and Clark Howell, the last named of great value in giving quick popularity to any undertaking with which he is connected. As Admiral Dewey and Robert T. Lincoln have never been especially notorious as educators, the use of their names along with those of Grover Cleveland, John G. Carlisle, Cardinal Gibbons, George Gray, T. Jefferson Coolidge, Edward Everett Hale and James C. Carter is designed probably to give indisputable tinge of the national breadth and depth of the movement. For the broad and national character of quite a number of movements is guaranteed largely by the use of several of these names whose owners are connected with so many of such broad and national movements that they cannot possibly know much about them or do anything for them except to permit the use of their names. Demigods are really scarce in this world.

Of momentous importance is the intimation that the President has commended this endowment movement in a letter. That caps the climax. Le roi le veut. That ought to fetch every one of the desired names for the advisory council. But will it?

For among the sample names, along with those of fellow-incorporators Jesup and Gilman of the General Education Board, are those of Mr. Robert C. Ogden, triune president of the Ogden Movement, and George Foster Peabody, its treasurer, who has likewise held the position of treasurer of the democratic national committee, and who is balanced by Cornelius N. Bliss, treasurer of the republican national committee, who presided last winter over the meeting of the Union League Club, which formally injected into the campaign the negro-suffrage question which Ogdenism had been so efficacious in reviving.

It may safely be assumed by persons knowing the real value of great names in promotion that but few of those mentioned will be concerned in the endowment plan beyond the use of their name. Their aggregation is a striking illustration of the interacting ramifications of high politics, philanthropy, education, literature, social pull and high finance, and reveals to the close student the manifold influences, working almost automatically, which bring into harmony Great Personages of this country. That is the ethereal side of the movement. The practical side will be attended to by the Ogdenites. The whole movement, as far as they touch it, may be epitomized in one sentence:

"What interest did they show in the University of Virginia before one of their heralds had been elected to its presidency, linking that great institution, according to the New York Tribune, with their scheme for the democratization of the South?"

That question is a fair one, without reflection upon the sincerity and earnestness of anyone connected with the movement.

In discussing another educational issue, the proposition that free meals be furnished common-school children, the New York Tribune must have imagined that its readers would forget for the moment a fundamental objection to the scheme of Mr. Ogden and his associates which it has so faithfully supported. For it says:

"Where is the process to stop, or is there any stopping-place? If free breakfasts and free dinners are to be given to school children, who are merely the raw material from which the State recruits its citizens, why not free breakfasts and free dinners to the actual, underfed citizens? Is the material in making more valuable than the finished product? That the State is furnishing free schools, free teachers, free books and free lectures has gone as far as it can go without great risk of encouraging the bacillus of pauperism is now maintained by many thoughtful educators. There is a point at which help defeats its own ends. The old homely maxim, 'God helps those who help themselves,' is one that may be said to lie at the basis of republican institutions. Any help that tends in the slightest degree to diminish this self-help is, and from the nature of it must be, a hindrance to individual development instead of an aid. We do not believe America is yet ready to acknowledge that methods which have heretofore answered their purpose admirably have suddenly become inadequate and obsolete. Over the door of every schoolhouse it writes the golden word 'Opportunity,' and points the way to success along the old paths of frugality, self-reliance and self-respect. Can it safely do anything else?"

Is the institution which is to finish the product of less importance in its exemplary position than the primary system which it is to influence? Is not the end of this proposed investment by Ogdenism of this citadel of American conservatism clearly promised, whatever may be its purpose and however attractive it may appear superficially to friends of the University of Virginia?

The success of the University of Virginia, that is, its success in domains where higher institutions of learning deserve to succeed, has been due to the fact that almost by compulsion it has been kept in the old paths of frugality, self-reliance and self-respect, the old Jeffersonian paths of genuine democracy. It has not had much money. But it has had many men. Their names will be remembered in honor long after those of the would-be democratizers of the South have been forgotten. It strays from the ancient and honorable paths and weakens its right influence upon the country when it accepts largesses or bounties from men upon whom it has no claim, especially if the movement that can only sap its self-reliance and self-respect be really engineered by men whose interest in Southern education, outside of negroes, was practically unheard of until the South had undertaken to solve the negro problem upon constitutional lines, and thereby threatened to block the game which, unsuccessful when backed by force, now would beguile through "philanthropy."

High Temperatures in Carding and Spinning Rooms.

By Eben C. Willey.

[Written for the Manufacturers' Record.]

From an experience covering many years in the manufacture of cotton, the effect of high temperature has been very forcibly brought to my attention in the supervision of the machinery which came directly under my control in the several departments, particularly in the carding and spinning, where the preparation of the cotton thread was in process.

And if the best results are to be obtained the temperature should be regulated in so far as it is possible in order to secure and equalize the conditions so there will be uniformity in results.

No doubt all managers of cotton mills have noticed during the season that is termed "dog days," and the same condition may happen before or after this time, that is, on hot days with the humidity above the normal, that the oppressive conditions in the carding or spinning rooms, owing to the same, resulted in the work running badly, with machinery stopped, broken ends numerous and a general feeling pervading the whole department that very little could be accomplished until a change in the weather had taken place. This condition might extend over a period of one, two or three days, and ofttimes a week or more, and all the operatives about the several departments appearing to be worn-out and discouraged with the running of their work. This is not theory or imagination, as nearly all mills experience these conditions during the summer months.

Any idea or invention which can regulate the temperature about any manufacturing plant so as to overcome this difficulty is of vast importance both in good work and economy, but I question whether same can be produced to apply to all manufacturing plants to meet the various conditions in the spinning of cotton thread. The ideal conditions under which same could be successfully applied would only be found in a very few of the cotton mills in this country, as no two are identically the same, which includes the mixing of cotton to the final process in the manufacture of the cotton cloth. The writer has noticed many times that a moderately high temperature in the spinning-room was not a detriment if the free circulation of air had been secured and the air kept pure and fresh, not necessarily by the introduction of damp air, but by the exhausting of foul air from the room.

It is generally believed that the whirling of pulleys and machinery about a mill produces a draught which is supposed to have a tendency to improve these conditions, and while they may create a circulation or agitate the air to some extent, there is no tendency to expel or draw in the air, which is absolutely necessary in order to derive any benefit from the outside.

All manufacturers have probably noticed the results in a spinning-room on a hot day, with the thermometer registering from 100 to 112 degrees or more, and have also noted that the higher temperature occurred later in the day, for in passing through the room it would be particularly noticeable between 4 and 6 o'clock, when the tension, so to speak, had almost reached the breaking point, the operatives having the appearance of being all fagged out, while the outside temperature might not have exceeded 96 degrees, sometimes less.

I am not aware of any improvement in the several humidifying machines in use which will eliminate the stagnant or foul air, and the exhausting of same from the room seems to be the only remedy.

While this might not materially lower the temperature, it creates a circulation which is beneficial both to the work and to the operatives. All persons know how desirable it is on a hot day to find a spot where they can obtain a little draught, and have realized many times that a breeze or current of air blowing on the body dries up the perspiration and has a cooling effect, and the action of same has its effect on cotton, whether in bulk or in the single threads passing through the mill.

The carding department is affected by sultry or sticky weather to a more or less extent on the machines beyond the lapper-room. Particularly is it noticeable on the fly frames, which show the effect by irregularity in tension, soft bobbins owing to the same, and the roving not taking the twist as would be the case on days of moderate temperature.

The cards would also be affected more or less by the sagging of the sliver between doffer and calendar roll, which increases the tendency of the web to tear apart, which would not be the case under better conditions. The consequence of this irregularity is an increased percentage of waste, unevenness in weights, from which uneven work is made for the after-processes to overcome.

The high temperature which is usual in spinning-rooms is the natural result of the frictional heat from the spindles, as well as the atmospheric conditions; and the heat thrown off by the spindles, if allowed to remain in the room, is a serious detriment to success, as it is always greater in this department than in any other about a mill.

Very high temperature in this department should be avoided, if possible, or a free circulation of air supplied, so that the heat generated from the spindles may be exhausted from the room. It does not seem reasonable that any pressure exerted inside this department could possibly have the desired effect, and the only way to obtain good results is to exhaust the air, which can only be accomplished by the use of fans.

To put the matter plainly, the air about any carding or spinning-room should be kept pure and free from that oppressive feeling which is sure to be the result in these departments on a hot, sultry day.

To overcome this difficulty I have found it advisable to use the exhaust fan, placing same in the top of a window at the end of the mill in each department, so as to keep the air in circulation in order to prevent the stagnation of same. This also prevents the temperature from rising to an extremely high point, and overcomes the oppressive feeling which a person experiences working under these conditions.

The fan works equally as well in con-

nection with the humidifying system, as it equalizes the distribution of the moisture thrown out by these machines; and in connection with same, a system of spray nozzles, either placed on the top or ridge of roof or next to the jet, is of great benefit. It would be advisable to place the sprinklers on the roof unless the room below was high and well situated, for the greatest benefit would then be derived from the spray falling next to the open windows at the side of mill. Of course, the finer the spray the better the result, and several mills which have been equipped in this way have shown very satisfactory results, with a lower temperature and better working conditions inside the mill in each department.

As the past summer was my first experience in the South during warm weather, the excessive heat was very noticeable to me, particularly during the latter part of the day in our spinning-room, the room being 70x300, two floors, with a tin roof, and with a temperature of 76 to 80 degrees at starting time in the morning, it would mount to 110 degrees to 115 degrees by 4 P. M. This extreme heat would be unbearable in our Northern mills, but the Southern operatives become accustomed to it to a certain extent, but it is very debilitating, and they showed its effect; and this extreme heat for a week or more was apparent in their general appearance and loss of energy; and while the humidifiers with which the room was equipped helped the matter a great deal, they did not keep down the temperature or expel the foul air.

After installing two 36-inch fans, one in each end of the room, a marked change was noticeable both in the decrease in temperature and the purer air, which showed an improvement in the running of the work and the appearance of the operatives. There was also less absence from work on account of sickness.

Another thing which helped in great measure was spraying the roof with a special sprinkler. The water dropping by the open windows also helped to cool the air as it was drawn into the room by the suction of fans.

To sum up the whole matter, if a Southern cotton mill would use water and fans freely during the hot weather, they would have little difficulty in running their work successfully and economically during this time without the trouble incident to a stoppage of work by being short of help. I believe when this matter is intelligently carried out it will be a great benefit to the Southern manufacturer.

I would also add that after we installed the fans and sprinklers the highest temperature recorded was 105 degrees in our spinning-room, which was on the warmest day of the year, and registered 100 degrees in the shade; and at no other time did it go above 104 degrees, although the outside temperature was 96 degrees to 100 degrees more than once, and under the above conditions it was much healthier and better for the operatives.

To show the variation in temperature from 6 A. M. till 6 P. M. both inside and outside the mill on August 18 and 22, I submit the following table, although on August 18 we only had the fan in operation, but on August 22 both fan and water were used:

Aug. 18.	Hour.								
Inside:	6	8	10	12	12.45	2	4	6	Avg.
Temperature.	90	96	99	97	98	101	102	104	98.37
Outside:									
Temperature.	71	90	92	92	98	98	100	90	92.12
Aug. 22.									
Inside:									
Temperature.	87	92	98	101	100	103	104	105	98.75
Outside:									
Temperature.	73	89	91	98	100	100	99	98	93.75

The tonnage out of Chattanooga, Tenn., over the Nashville, Chattanooga & St. Louis Railway has increased from 49,677 in 1892 to 165,723 in 1904.

TUBE WELLS IN DROUGHT.

Their Satisfactory Service Recently in the Carolinas.

Editor Manufacturers' Record:

Since the middle of July there have been practically no rains of any consequence in the Piedmont section of the Carolinas, and as a natural result the small creeks and branches have dried up, and even the larger streams and rivers are greatly diminished in flow, the Congaree river at Columbia, S. C., being reported one and one-half feet lower than any previous record up to date of October 10. The annual rainfall in South Carolina is from 45 to 52 inches, and up to the present writing only 29 inches have fallen. This leaves the balance to be made up in three months to equal average annual precipitation; and these three months, October, November and December, rarely exceed a total of 10 inches in normal years. Dug wells that have been known as "the best well I ever saw" and springs of the same reputation have gone dry in some cases, and in others the water is so low as to be muddy and practically unfit for use.

During this dry period it may be of interest to engineers and others interested in water supplies to note the behavior of some of the driven or tube-well systems in the section under consideration—plants that have been pumped, most of them continually, for from a few months to nine years. The supplies are obtained from a formation in decomposed gneiss or schist, an average longitudinal section of which is given, and although none of the supplies are large, they are in most cases sufficient for needs of small cities and towns. Up to the present date the writer has been unable to get any reports as to the dimmition of the capacity of any of these plants in the dry section.

The water table, or level to which water falls in ground, under continued pumping has remained the same, as determined by vacuum gauge on pump, showing the immense storage of water underground. At the Brogon Mills, Anderson, S. C., the plant installed there has been pumped almost continuously for over four months at the rate of 200,000 gallons per 24 hours, and the vacuum gauge shows a lowering of water table to 12 feet, which is the same point reached by preliminary 48-hour test. The point of 12 feet in water table at this plant being reached, the inflow from surrounding gravel, sand and decomposed rock is sufficient to keep water at that level at the rate of pumping before mentioned.

The town of Pelzer, S. C., is supplied from three plants with an aggregate supply of 225,000 gallons per 24 hours; no shortage reported; plants in operation continuously since 1895.

The Victor Manufacturing Co. at Greers, S. C., has two plants, one of 80,000 gallons and the other of 100,000 gallons capacity. They have just commenced using the 100,000-gallon plant, and pumping continuously at that rate have lowered water in the ground just eight inches, at which point it stood after 48 hours' service. The natural overflow of the smaller plant is at present being used for supplying drinking water to the mill village, and is about 1200 feet distant from the larger plant. In the borings recently made on a preliminary survey for subsurface water at Monaghan Mills, Greenville, S. C., the sound made by the flow of water through the bed of decomposed rock can be distinctly heard, showing an unusual velocity. The quantity available here is about 100,000 gallons per day of 24 hours. This same phenomenon is observed at Belton, S. C., in the plant installed last year, of 150,000 gallons daily capacity. These supplies are located by the same methods explained in a previous article on subsurface water in gravel beds adjacent to surface streams, viz., examination of water-shed tributary, character of soil, general topography and actual borings by means of water jet, to outline course and depth of flow, direction being determined by levels. These streams vary in depth from 20 to 50 feet from surface, and are generally overlaid by several feet of stiff clay, then sand or fine decomposed rock to a thin crust of hard rock, beneath which lies the flow of water, running in a bed of decomposed rock varying in size from that of a walnut to a cocoanut, the bedrock of granite being below this. In North Carolina the towns of Wadesboro and Roxboro are supplied from similar systems, which may be termed rock wells.

The water from all plants mentioned is pure, soft, and average temperature of 60 degrees winter and summer. There is a small overflow from all of these systems, but they are being pumped to develop maximum supply, in most cases, by triplex power pump, operated by electricity, making a plant easily and cheaply maintained.

In conclusion, we may safely assert that, having gone this length of time with no shortage of supply, that the properly-installed tube-well system is showing up most satisfactorily and will become a more generally adopted source of water supply in the future, even where larger quantities are required than those noted in this article.

C. G. HUBBEL,
Superintendent Engineering Company of America.

Charlotte, N. C.

Mining in Union County, N. C.

Editor Manufacturers' Record:

There is considerable activity in mining in Union County, North Carolina, with very favorable results. The Colossus Mining Co., operating the Howie and several adjoining properties about nine miles west of Monroe, is installing a large cyanide plant to treat the ore from the immense vein it is now developing. The ore body bids fair to rival some of the larger Western mines both in tonnage and richness. It is reasonable to expect that this plant will be running early in November, and will soon produce a magnificent dividend to the enterprising men from Pennsylvania who have invested their money and time in developing this wonderful property.

About two miles northwest of Monroe the Nichols Mining Co., operating on part of the old Osborne estate, has opened up a vein of fine-looking ore, some of which shows considerable free gold, but is rapidly developing into a sulphuret ore, showing considerable copper. The shaft now at 50 feet shows the vein to be somewhat broken and about five feet wide and highly mineralized, and from all appearances will soon develop into a large vein of good ore. In prospecting the surface the company has located a number of parallel veins which seem to be coming together, and indicate a large body of ore when greater depth is obtained. The Nichols Mining Co. is operated by Baltimore people who are fortunate and have shown good judgment in having chosen a property that is developing so satisfactorily.

Work on the Brown Hill mine, about eight miles north of Monroe, is being pushed by Massachusetts parties. They are doing considerable work, and at a depth of 85 feet have drifted on the vein about 130 feet, and are now crosscutting to ascertain the width of the vein, which is of low grade, but carrying a number of large shutes of very high-grade ore. This property is admirably located, and undoubtedly will well reward the owners for their confidence in it, as they have considerable ore on the dump now.

The Black mine at Indian Trail, 10 miles north of Monroe, has been shut down temporarily, owing to the change of ore from a free-milling and concentrating ore to a good smelting ore running high in copper and lead. This mine, as greater depth is obtained, will make a good showing in a very fine smelting ore.

There are a number of other mines which are worked spasmodically, among which are the Smart, Stewart, Long, Moore, Bonnie Doon, Loney, Crump, Welsh and others, most of which would make good payers if worked on business basis. The Welsh mine deserves special mention, owing to the fine showing on the surface by panning.

JOHN. W. TOWNSEND.
Monroe, N. C.

HANDLING OF COTTON.

Suggestions Bearing Upon the Warehouse Receipt as Collateral.

Editor Manufacturers' Record:

We have of recent months become a constant reader of your most estimable paper.

We find you almost beyond criticism, but on some lines—one, at least—we think you in error; and when a man is wedded to an error it seems more everlasting than the marriage ties of social life, for there is apparently no divorce.

In your discussions of the "Waco Plan" you always dwell on the co-operation of the warehouses. Why do you do this? It greatly entangles the matter and magnifies the difficulties to be overcome.

Every city in the cotton belt has all the warehouses already needed to store all the cotton that would be drawn against. Here in Eufaula we could store the entire product of our territory.

We don't need warehouses—only need the cheap money.

Within 48 hours we can furnish bonded warehousemen and agents and the best insurance in the world, and in a few days make use of a quarter of a million dollars of cheap money.

This is the nearest to an absolute security that the money markets of the world can get. Here our warehousemen are trusted without being bonded, just as our bankers are all over our land, and in an experience of 30 years I have yet to know the second warehouseman who violated this trust.

In advancing on cotton we take receipts from an applicant for money and telephone warehouseman to know that they are genuine and if they represent an average lot of cotton. We then agree on a margin in the cotton not to be drawn against, anywhere from $2 to $20 in each bale. Then the warehouseman is notified that this cotton is held as collateral, and he writes insurance payable to money-lender as his interest may appear and the owner receives the advance.

What could be more secure than such a transaction? Not even a government bond. When the cotton is offered for sale the warehouseman calls on lender for his receipts and pays the advance and interest and insurance before delivering of the cotton to the purchaser.

Our small banks can use all the money they have to put out at good high rates. Then why accept less?

We need the money and are willing to pay 6, 7 or even 8 per cent., which is Alabama's legal rate. Much of our borrowed capital is costing the farmer 12 per cent. for the time from January to October, and if it's not returned then by sale of cotton an additional interest of 1 per cent. each month till same is paid, thus making it 15 for the year.

Now, don't discuss co-operation, but fix a plan so each city, especially Eufaula, can get what cheap money she can use on cotton in storage.

The farmer realizes all your arguments

on this subject as wise but not practical, because the money-lender stands between him and cheap cotton.

If some capitalist or bank concludes to try this plan he would write South to a banker or money-lender to discuss this matter, and the correspondence would drive you to avoid the undertaking.

No money-lender would advise a competitor to enter the field where he was making a fortune.

I am secretary and treasurer (without bond) for Eufaula Board of Trade, trusted with authority to handle and pay out their money; also secretary of the Barbour County Farmers' Club. I have served my life as a banker and know whereof I speak. J. H. REEVES.

Eufaula, Ala.

[While there are some interesting points worthy of consideration in Mr. Reeves' letter, there are also some errors. Mr. Reeves is mistaken in his idea that the Manufacturers' Record is advocating the Waco plan of warehousing. That plan is a suggestion for the organization of a promoting company having in view, after this promoting company has been organized, the organization by it of county or State companies to build warehouses throughout the South through the co-operation of farmers and others. It has seemed to the Manufacturers' Record that some features of this plan—more properly, some features of the plan of working up the promoting company—are not calculated to bring the best results. For stating that we regarded this scheme as it now stands as somewhat visionary, some of our good Texas friends have quite misinterpreted the position of the Manufacturers' Record. Instead of what seems to us a complicated plan of organizing by the co-operation of the farmers a promoting company in order that this promoting company may undertake the organization of individual warehouse companies, we believe that the thing to do is for the South to go ahead and build warehouses, each individual community or county acting on its own responsibility, building a warehouse or warehouses to meet its own needs without any intermediary or promoting company undertaking to form a farmers' co-operative system, or for regular organized companies to build warehouses independently or in connection with local people.

There are many communities in Texas, as well as in other parts of the South, that are not so well supplied with warehouses as Mr. Reeves reports Eufaula to be, and many of these places could with advantage, either independently or acting in connection with other companies, build warehouses in which to store cotton and issue therefor negotiable receipts. As an essential factor in making a success of this it would seem to be necessary to meet just the conditions which Mr. Reeves mentions. In the warehouses to which he refers money is loaned not on the basis of the collateral so much as on the basis of a man's credit. The bank which telephones to a warehouse to know if the cotton is there, and then lends money on the receipt, is looking more to the credit of the man who has the cotton than to the character of the collateral, and such a warehouse receipt is valueless outside of the immediate community. For that very reason the cheapest money cannot be had. If the warehousing system is to reach its fullest usefulness every receipt issued must, either through the guarantee of some bonding company, as is now done with a number of warehouses in the South, or through the responsibility of the warehouse company itself, be gilt-edge collateral in any money market in the country. The owner or holder of such a receipt would then borrow money at the lowest rate of interest, not by virtue of his individual credit, but by virtue of having the very best mercantile collateral in the world. Instead of asking the bank as a favor to lend money on cotton, the holder of such a receipt would have a collateral which would make the banks seek him in putting out their money on the best security. Thus, instead of the South having to pay the high rates of interest quoted by Mr. Reeves, its merchants, manufacturers and farmers should be able to secure much cheaper money, and this they will inevitably be able to do whenever the warehousing business has been developed to that point that a cotton receipt is regarded on its face as unquestioned security in any money market. The development of such a system would increase the business of Southern banks to so large an extent, and enable them to bank on gilt-edge collateral rather than on a man's individual credit, that they would be in far better shape to increase the volume of their operations, and thus the banker and every other industry in the South would be benefited. It would be a mistaken idea to suppose that bankers would prefer a high rate of interest with a small volume of business to a low rate and a large volume. New York has the largest banking business and the lowest rates of interest in America, and the business is far more profitable in the aggregate than would be a smaller volume with a higher rate; and so the development of every interest in the South that tends to increase the volume of safe banking business, even if it somewhat lessens the rate of interest, will prove of value to the bankers.—ED. M. R.]

PIG-IRON IN GERMANY.

Suggestions for American Manufacturers and Exporters.

Ad Hamm & Co. of Hamburg, Germany, writing to the Manufacturers' Record regarding the iron trade of the United States with Germany, says:

"A change seems unquestionably to have taken place to a certain degree since the American market for pig-iron has become firmer. Whether the advance is justified on account of the annual fall needs just beginning, or whether it is based solely upon the transitory manipulations of certain speculators who want to force it a few figures in order to protect themselves, is a question which will soon clear itself.

"However, there is one point to which we would like to call your particular attention. In case the American furnaces should at any time, either now or later, become desirous of resuming the business of exporting to the continent of Europe, they ought certainly not to wait until absolute necessity compels them so to do. This will assuredly happen on account of their enormous production. When? That is a question of time only. American furnaces ought even now to insure themselves a supplementary market by placing themselves with competing prices in communication with long-established firms in Germany, more especially in Hamburg; for with export orders upset too great sacrifice would have to be made in order to compete. When quotations are only immaterially lower, preference, at least in our market, will be given to German and English pig-iron in every case, it being understood that the consumer does not know the quality of American iron, or at least has forgotten its value, and so would have to institute extensive experiments anew. It is also quite clear that experiments of such a nature would occupy considerable time, probably even an entire year, before orders would be forthcoming. After the lapse of such a great interval conditions might again be entirely changed, and, which is the main point, after such a long wait your own exporters would not derive much profit.

"It would be different, as stated, if the American furnaces would remain in touch with our market, so that it might not again be necessary to determine the question of quality, that is to say, if this opening for their product is desired.

"We would therefore earnestly recommend that you bring this matter in complete detail to the attention of masters of furnaces, and we shall most willingly supply you with further particulars at any time they may be needed."

The Pig-Iron Market.

Matthew Addy & Co. of Cincinnati, in their weekly report, say:

"This has been another stirring week in the iron trade. There have been excitement and activity in all branches of the business. Events have been crowding thick and fast, and a very large tonnage of pig-iron has been sold; in fact, probably more pig-iron has been sold in the past 10 days than in any similar period since some time in 1902. The Northern furnaces have been particularly favored, and they have sold so freely that most of them now are in a thoroughly independent position, and, as a consequence, Northern iron which recently was quoted at $12 for No. 2 at the furnace is today firm at $13, with every indication that it will be $14 within a few days.

"Virginia iron for a long time has been practically shut out of the Middle West, but in the past 10 days several heavy sales of this material have been made. As far as Southern iron is concerned, the demand is vastly in excess of the supply. There has been an insistent call for Southern iron for all kinds of deliveries, which the furnaces have not been able to fill in any adequate measure. Of course, part of the tremendous trade in Northern iron necessarily arises from the fact that there has not been enough Southern iron to go around.

"The long-continued strike in the Birmingham district has resulted in a scarcity of Southern iron that is almost as bad as the scarcity that existed in the height of the recent boom. Soft irons are in a particularly short supply, and it is doubted whether 1000 tons of some of the soft grades could be secured for reasonably-prompt shipment at any price. Of course, it is to be hoped that, with the end of the strike, which must now in all reason be not far distant, there will be more Southern iron; so that the great inconvenience which consumers are suffering from at the present time for lack of iron will be removed.

"Furnaces have no stocks on hand, as has been said, and consumers are likewise absolutely bare of any supply, so that all the conditions are very favorable for a continuance of this strong and advancing market. There is no let-up in the demand for pig-iron, and it is evident that consumption is growing in the most rapid fashion."

Alabama Steel & Wire Co.'s Plans.

Various reports have been current during the past week regarding additions to be made next year to the plant of the Alabama Steel & Wire Co. at Gadsden, Ala. The facts, according to a telegram to the Manufacturers' Record from E. T. Schuler, president of the company, are that the company will begin next spring the construction of a steel-rod mill, but no additional iron furnaces or other plants are now under consideration. Recently the company has purchased the properties of the Underwood Coal Co. at Altoona, Ala., including coal mines with a daily output of 500 tons, this coal being of a quality suitable for steam, gas and coking purposes. The Alabama Steel & Wire Co.'s furnace consists of one stack 90x20, its annual capacity being 110,000 tons of iron.

Looks Like $15 Iron at Birmingham.

[Special Dispatch to Manufacturers' Record.]

Birmingham, Ala., November 2.

It looks like there is a runaway market ahead of us. Orders are good for business for the first quarter of next year, and most of it is being declined. Sellers for the balance of this year are withdrawing. Prices are very irregular and ranging from $12 to $13, according to circumstances. It is a hard matter to diagnose the market, but it looks as if $15 iron is ahead of us. Some moderate sales have been made at $13, while some are unsuccessful in trying to hold the price to a basis of $12 for No. 2 foundry. The buying is general, and not local only. The iron to meet the demand is not in hand. J. M. K.

Water-Power Near Belton, S. C.

Several months ago reference was made to the incorporation of the Belton Power Co. of Belton, S. C., and its purpose of developing a valuable water-power on the Saluda river near Belton. During the past week the company filed for record a mortgage for $300,000, the proceeds of which are being expended to build the dam and power-houses required for the plant. Contract for constructing the dam was awarded to the J. F. Gallivan Building & Construction Co. of Greenville, S. C., and Palmer, Mass., and this work has been proceeding. The dam is to be 600 feet long, 32 feet high and 35 feet wide, of concrete and stone, and is expected to develop 5000 horse-power. This energy will be transmitted by electricity to Belton and that city's neighborhood for the operation of all kinds of industrial plants. J. E. Sirrine of Greenville, S. C., is the engineer in charge of this important development.

Fort Worth's Big Flour Mill.

There is now approaching completion at Fort Worth, Texas, a flour mill and grain elevator plant that will add materially to the importance of that city's grain interests. The plant will be ready for operation by December 1. It includes a mill with a daily output of 2000 barrels of flour, storage capacity for 300,000 bushels of grain, and wareroom space for 150 carloads of finished products; also cooperage shops to supply the barrels. The Medlin Milling Co., capitalized at $200,000, is building the plant as an addition to its original establishment at Wolfe City, Texas, where it operates a mill of 500 barrels capacity.

Oil Rights Acquired.

Leases for oil rights on 4000 acres of land near Crossville, Tenn., have been delivered to representatives of Pennsylvania oil men who also control leases not far away. The boring to be made near Crossville will be a large factor in determining the future action of the syndicate.

Wants American Manufactures.

I. W. Librowicz, Warsaw, Russia, writes the Manufacturers' Record that he is in the market for rubber goods, carriage parts and glazed paper made in America. Manufacturers are invited to send quotations and full particulars.

Want Cheap Sewing Machines.

The Societe Coloniale Indo-Belge, Antwerp, Belgium, whites the Manufacturers' Record that it wants to correspond with American makers of cheap sewing machines.

Wants Pitchfork Handles.

Ernst Bunge, 124 Boulevard de Strasburg, Havre, France, wants addresses of American manufacturers and exporters of pitchfork handles.

THE INTERNAL-COMBUSTION LOCOMOTIVE.

A Possible Revolution for All Railroad Traffic in the Hoadley-Knight Engine.

Two weeks ago the Manufacturers' Record published the first announcement of contract made by the Southern Pacific Railroad Co. for a new style locomotive, and at that time gave such particulars as were obtainable. The New York Press of Sunday last published a full description of it, and from that we take the following story:

"The Southern Pacific Railroad Co. has contracted for a locomotive that is expected to revolutionize the transportation system of the world. It is a power-house on wheels. Within a few months it will have its public trial. The test will be watched by mechanical engineers and railroad men generally with the deepest interest. Should the locomotive come up to expectations, its introduction will mark one of the most important epochs in traction history. The new locomotive is fireless, smokeless and waterless. It needs no coal, it drops no ashes and it throws no sparks or cinders. Its builders say it would be able, provided a clear track could be obtained, to haul a 2000-ton train from New York to San Francisco without a single stop. There would be no need of delays for fuel or water, for the locomotive can carry enough fuel for the journey of 3000 miles, and it needs no water for steam. Theoretically all this has been figured out to a mathematical certainty. What remains now is a practical demonstration.

"The locomotive uses a combination of compressed-air power, fuel-oil power and electrical power. It is an application of the internal-combustion type of engine to locomotion. The engine proper, which is being built at the Corliss Works in Providence, R. I., will be ready for testing by December 1. The generator and electrical parts will be built by the General Electric Co. at Schenectady, and the trucks and frame by the American Locomotive Co. at Schenectady. Every part of the new locomotive is of standard make.

"This new locomotive is the design and joint product of Joseph H. Hoadley, president of the International Power Co. and organizer of the Americal Locomotive Co., and Walter H. Knight, chief engineer of the International Power Co., and formerly with the General Electric Co. It embraces some remarkable features. The Diesel engine, which heretofore has been applied to stationary engine work alone, will be used to drive a dynamo which will provide the electrical power for the locomotive. A speed of from 100 to 120 miles an hour is expected on the trial run. There is said to be no limit within reason for the speed the locomotive might attain, provided the roadbed and other conditions permitted. An average speed of 100 miles an hour could be maintained from the Atlantic to the Pacific if it were possible to get the right of way. Such speed could be attained by other electric traction vehicles, it is pointed out, were it not for the difficulty of getting power at all times. With the trolley system the trolley jumps the overhead wire. With the third rail the shoe is alternately on and off the rail when high speed is attempted. With this new locomotive there is no trolley and no third rail, and the application of power is continuous.

"Aside from the question of speed, the builders of the new locomotive believe it will bring about important economies in the operation of railroads. The steam locomotive has to carry its fuel and water with it. This means five tons of coal and 7000 gallons of water In addition there is the weight of the tender. It is an axiom in traction engineering that 'it takes a pound of weight to carry a pound of weight.' Of all the coal burned by a steam locomotive, 96 per cent. of the energy produced passes up the smokestack and 4 per cent. 'gets onto the boilers.' When it comes down to the final test only 2½ per cent. finds its way to the driving-wheels. To overcome this waste has been one of the great problems engineers have been studying for years. The Diesel engine has a thermal efficiency of 38 per cent. There is a loss in the transfer to the generator and armatures, but 28.35 per cent. of the energy 'gets onto the motor and axles.' In other words, the new locomotive is expected to save more than eleven times as much energy as the steam locomotive.

"That the limit has been reached in the building of steam locomotives is accepted by railroad managers. Within the last five years locomotives have gained 100,000 pounds in weight, and they can take on no more. This has been accompanied by an increase in tender capacity, which is a waste on the principle that 'it takes a pound in weight to carry a pound in weight.'

"Driving-wheels can be made just so large and no larger. Connecting-rods can be made just so long and no longer. If the driving-wheels are giant affairs it means a tremendous weight to the machine that must come on the tracks in a comparatively small space. There is one way to 'spread' the weight, and that is to have longer connecting-rods. But here a difficulty is encountered. Tractive power necessary for high speed or great draught cannot be obtained if the rods are much over 12½ feet. This fact has put steam locomotive builders between the devil of big wheels and the deep sea of the short connecting-rod. If the steam locomotive could be made more compact greater power could be obtained: but, on the other hand, the weight would be so concentrated that there is not a curve in the roadbed or a bridge on the line that could stand the strain.

"The locomotive that is being built for the Southern Pacific has no driving-rods. It is run by a dynamo, and its weight is confined not by the length of a 12-foot connecting-rod, but is distributed over nearly 50 feet. It is not bothered by ponderous, rigid driving-wheels, and it can take a sharp curve without tearing up the outer rail, for its trucks are pivotal, just as the trucks of a motor car on the Elevated. It loses no tractive power as a result of this 'spread,' for its power comes from the dynamo and not from straining driving-rods.

"The limit of speed for safe running with the present style locomotive is 90 miles an hour. If an attempt is made to get up a regular speed of 100 miles an hour or more there is bound to be trouble sooner or later. The finest materials—and these alone are employed in this day of railroading—will not stand the strain of greater speed. The constant hammering of the connecting-rods, for instance, would result in crystallization and make the tempered steel brittle as glass.

"The roadbed will not permit it, for another thing, and in this respect the advocates of the internal combustion locomotive say the new engine will be found a vast improvement. The 'maintenance of way,' or keeping up the roadbed, is one of the greatest items in railroad expenses. This is not the fault of the heavy freight or passenger cars, but of the locomotives. Anyone that has ridden in the cab of a locomotive knows how the side-rods jar when the train is in motion. It is severe when the locomotive is pulling a heavy load, but it is worse when the engine is 'running idle,' when the steam is shut off and the reciprocating parts are unbalanced. When a locomotive is coasting down hill with steam shut off the worst effects are experienced. It means that the great driving-rods pound and hammer, loosening spikes and jarring the ties, thus giving the section hands plenty of work with their picks and shovels. With the new locomotive the wear and tear on the roadbed is minimized. The trip down hill means that the Diesel engine is shut off and the whole train, engine and cars, coast down hill as easily as a trolley car. There is no more pounding than comes from the mere revolution of wheels. The fact that the locomotive is spread over a space of about 50 feet means that its weight of 200,000 pounds is well distributed, and that a bridge that might shiver under the impact of a steam locomotive will find no difficulty in sustaining the new flyer. Its inventors contend that the new Southern Pacific locomotive can haul a heavier train at higher speed and with less damage to the track over a 72-pound rail than the ordinary type of locomotive over a 90-pound rail.

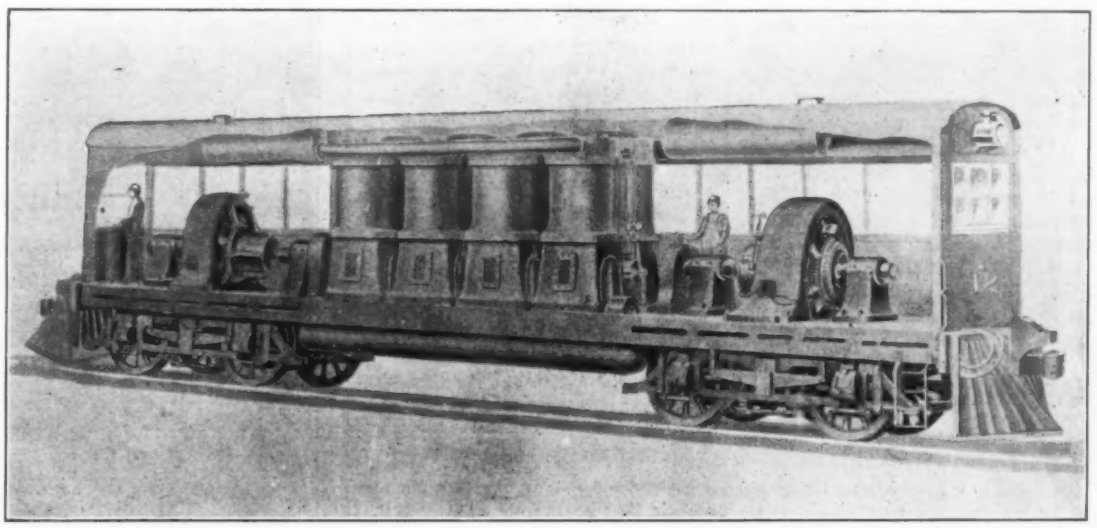
"Four duplex Diesel engines with Mr. Hoadley's improvements will furnish the power for the dynamos that generate the electricity on the Southern Pacific locomotive. Stripped of the technicalities that are so confusing to the layman, the principle of this engine may be described as follows: Its action is on what is known as the four-stroke cycle. There is a compressed-air reservoir, from which the power is obtained for starting. This gives the piston its first stroke when it takes in air—air alone at atmospheric pressure and temperature. The second stroke compresses this air to a high pressure and to a temperature of about 1000 degrees Fahrenheit. The third stroke is what is known as the working stroke. At this point oil is sprayed into this hot incandescent air—one can hardly imagine what 1000 degrees Fahrenheit means. The amount of oil that is sprayed in is regulated by governors. During the first part of this stroke the combustion of this oil is caried on at a constant pressure for a period which is regulated by the amount of oil sprayed in. The second part of the stroke is practically an expansion without transference of heat. The fourth stroke exhausts the gases.

"The only fuel used is the crude oil that costs from three to five cents a gallon. Petroleum or any kind of crude oil can be employed. The cost per horse-power hour is said to be less than half that for steam.

"No railroad in America is better adapted for the introduction of the new type of locomotive than is the Southern Pacific. It taps the oil belts of California and Texas. That insures a fuel supply at the lowest price. The line traverses a great desert in Mexico and Arizona, and the cost of maintenance of water tanks in the arid country has been heavy. If the company could do away with these water stations and the pumping plants necessary to fill the tanks it would mean a big saving. Heavy as is this expense, it is almost equaled by the losses the company must pay in other sections owing to damage done by fires started by locomotives in the dry season.

"If the new locomotive does all that is predicted for it in the tests on the Southern Pacific, some of the railroad men who have been studying its plans think it will be only a question of a short time when it is adopted by the trunk lines entering New York. To equip it with a 'shoe' to take power from the third rail in the way the motor cars do is simple.

"It is obvious that the steam locomotive will not be used in the tunnels under the Hudson. They will be used on the main lines, but when the trains enter the tunnels at the Jersey shore they will be taken through by electric motor engines. But there is the question of time to be considered, the confusion of switching the steam engine off and attaching the electric motor. This means delay, and if the track is not clear for the switching process a blockade will result. This is liable to happen many times, when it is considered that



THE NEW INTERNAL-COMBUSTION LOCOMOTIVE NOW BUILDING FOR SOUTHERN PACIFIC RAILROAD.

at certain hours of the day the trains will have to go through the tunnels to the number of at least one a minute.

"Here is where a locomotive of the new Southern Pacific type would be serviceable. It could run with its internal combustion to the mouth of the tunnel—that is, the engines on the car could furnish the power to run the dynamos and furnish its own electricity up to this point. It could approach the tunnel at any speed, and when it reached the tunnel the 'shoe,' striking the third rail, would automatically shut off its own engines. The engineer in the cab would have his hand on the controller, but the change in the source of his power would be so quick that he would not notice it. The train could run to the station by the power from the third rail. On coming out again the shoe would drop off the rail, automatically start its own engines, and the locomtoive would proceed on its outward journey under its own power.

"One of the experts who has examined the plans says the new locomotive may be thought to be complicated in construction, but in truth it is simple both in construction and operation. The engineer has to know something of electricity and also understand the internal-combustion engine. After this the rest is easy. He is little more than a motorman when the run is started, and his hand is on the controller. The locomotive, like a trolley car, can run either way, and does not require a turntable to get it started in the right direction. The engineer simply takes off his controlling lever, walks through to the cab at the other end and starts off."

It is understood that this system can be admirably adapted for the construction of a combination locomotive and passenger car suitable for interurban and suburban work, especially so inasmuch as such a combination car would make the streets of the various cities practically the terminal stations for the trunk lines, a trolley pole or third-rail shoe taking power from the central power station to be used within city limits, and then, as soon as it is outside of the city limits, this combination car and locomotive would start with its own power and proceed at full speed.

Replying to a letter asking for further particulars regarding this locomotive, Mr. Joseph H. Hoadley, president of the International Power Co., writes as follows:

"It is commonly understood that a locomotive requires six pounds of fuel per horse-power per hour. Inasmuch as most locomotives being used throughout the country on the heaviest trains exert on an average of 1000 horse-power per hour, this would mean 6000 pounds of fuel per train hour. This, however, is not true, as it only takes into account the number of pounds of coal consumed in the furnace, while the water is as much a part of the fuel as the coal, inasmuch as it is burned at a ratio of ten times as much as the coal in the furnace, and although it is within the boiler, it seeks the same avenue of egress of going up the stack with the unconsumed gases generated on the grate, the water passing from the boilers through the cylinders, thence the air. Therefore, for 1000 horse-power the extravagant use of a locomotive would mean 60,000 pounds of water per train hour, which makes 66,000 pounds total. In the case of the Hoadley-Knight internal-combustion locomotive, using one-half pound of oil per horse-power per hour, for 1000 horse-power it would require only 500 pounds of consumed fuel per train hour. Taking into consideration the fact that the water stations along the lines of the railways throughout the United States are placed on an average of about one hour's run, and if all the engines were of the heaviest and biggest money-earning type, it would require 66,000 pounds of weight to carry the 66,000 pounds of fuel, which would make a total of 132,000 pounds that must be hauled as deadweight. This would be against 500 pounds of fuel if loaded at like stations and 500 pounds of weight. Taking the average carload from the Eastern centers to the Western coast, the freight rate being $2 per hundred pounds, and the carload being 20,000 pounds, would mean that the marked carrying capacity with this locomotive as against the steam locomotive would be increased six and one-half cars, making a gain in revenue on each train going to the Pacific slope in actual net revenue from the extra amount hauled of $2600 per train. Assuming there are 50 trains originating from the East to the West by all lines would mean a net revenue from what today is dead tonnage of $130,000 per day. You can readily see what this means, and the interest alone on the capitalistic investment this would save would demand a complete change of equipment for every train as speedily as it could be brought about.

"I could readily take you into other fields in this article with regard to snow-plow work alone, which would mean the saving of hundreds of thousands of dollars per annum from blockades, but this, I think, should be treated separately. I could say further in regard to the train system by itself that an internal-combustion engine would immediately relieve railway officials from all troubles arising from extreme temperatures in operating their systems, such as the freezing up of their entire water systems, both on the engines and preparatory to furnishing engines; the maintenance account, of course, is obvious. The repair on the staybolts in the boilers alone, together with the tube work necessary, would almost pay for the running of this entire locomotive. Again, this engine has been operated for weeks at a time in a power station without shutting down, and there is no reason why it should not operate on the locomotive the same way, and not require the machine to go into the roundhouse every trip."

Natural Gas in Sugar-Making.

Naturai gas, said by experts in different parts of the country to be superior to that found in the natural-gas fields of Indiana, has been discovered in an unlimited quantity within 60 miles of New Orleans on the Godchaux sugar plantation at Raceland, Lafourche parish. The Godchaux Company has sunk three wells, all of which are producing gas in quantities sufficient to run all its machinery on its plantation, which has an annual output of 12,000,000 pounds of sugar, and is also utilizing it for its pumps and electric-lighting plant. The sugar-making machinery was originally equipped with oil burners, but the discovery of the gas caused the owners of the plant to dispense with oil as fuel and substitute gas.—New Orleans Times-Democrat.

For Rivers and Harbors.

The Trans-Mississippi Commercial Congress at St. Louis recommended liberal expenditures by the federal government for the improvement of rivers and harbors, and urged especially the improvement of the Mississippi river between Cairo and the head of the passes in accordance with the plans and recommendations of the Mississippi River Commission, deeper water in the Mississippi between Minneapolis and St. Louis, the ship canal between the Mississippi and the Great Lakes and the improvement of Galveston harbor.

Much prospecting has been done in the new coal field near Fort Hancock, Texas.

INDIVIDUAL EXHIBITS AT ST. LOUIS.

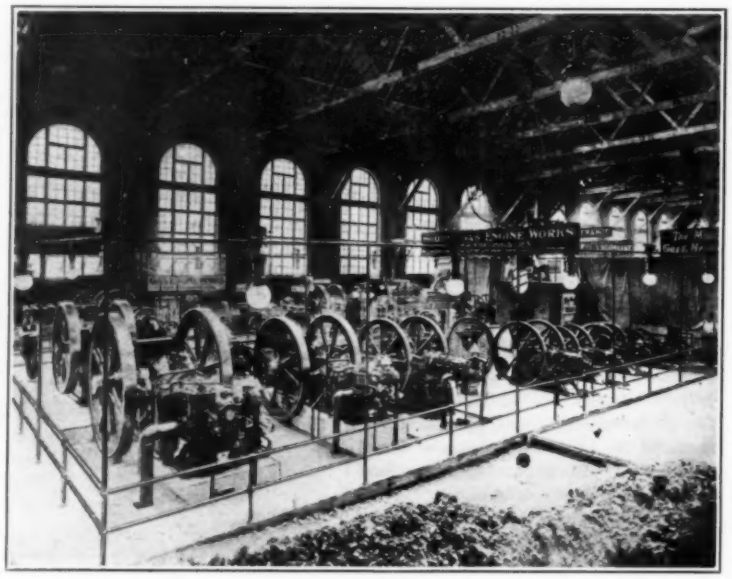
[Special Correspondence Manufacturers' Record.]

St. Louis, Mo., October 31.

The exhibit of the Otto Gas Engine Works of Philadelphia, Pa., in block 41, aisles D and E, Palace of Machinery, World's Fair, is devoted to gas and gasoline engines exclusively.

The general display is characteristic of the high grade of engines the company builds. There are 17 engines shown, 11 of them fitted up and running, ranging in sizes from 2 to 140 horse-power.

There are several novelties of interest. There is a 40-horse-power horizontal single-cylinder engine directly connected to a Diehl generators. The engine, of Otto special electric-light type, is fitted with patent rotary ball governor which regulates the charges taken or fuel consumed according to work done, sometimes called "hit-and-miss" governing. The regulation of this engine is perfect, variation in voltage not exceeding 2 per cent., with engine carrying anywhere from full load down to but a few lights. The claims made for this engine are, being a single-cylinder type, it requires less attention and is very much simpler in construction than an engine having a multiplication of cylinders. Most users of gas and gasoline engines look for a machine which does not require constant attention, which condition this single-cylinder direct-connected type engine fulfills.



OTTO GAS ENGINE WORKS' EXHIBIT.

The two largest types of engines show latest design for large engine construction, being fitted with Otto patent self-starters, the method of starting being to set engine at point of ignition, and, with a hand-pump provided, a charge is pumped into cylinder. After cylinder is charged it is cut off by hand-lever, and a somewhat greater pressure is pumped into a vessel which is part of starter. When sufficient pressure is pumped the hand-lever is opened, allowing greater pressure in vessels to come in contact with engine piston, which slowly turns engine over, when the igniter snaps and a charge is ignited, which gives the flywheel sufficient momentum, when next charge is drawn in by the engine in the regular way. This method of starting insures against failure to start, as it is not dependent upon an air supply stored by engine when running and annoyances caused when air is exhausted.

The Otto engines are fitted with patent electric igniters having both movable and stationary electrodes mounted in a phosphor-bronze flange. There is also shown a portable gasoline type used for farming purposes; also hoisting engine, which is very compact and has many points of advantage.

The marine-type vertical two-cylinder engine is of the same construction as many which the company built for submarine boats of this and larger sizes.

Two types of pumping engines are shown, vertical and horizontal pump, being directly geared to the engine, making a very compact design. There is also a 10-horse-power engine directly belted to generator.

The Otto exhibit space is lighted by arc and incandescent lamps run by Otto engines on view.

Otto engines have been exhibited at all the prominent expositions, and the company claims the distinction of having over 100 gold and silver medals and numerous awards and diplomas, and these are shown at St. Louis.

Features of One Engine.

Among the engines comprised in the plant which furnishes power for the Intramural Railroad is a Fleming tandem compound four-valve engine made by the Harrisburg Foundry and Machine Works of Harrisburg, Pa. It is direct connected to a 400-kilowatt Crocker-Wheeler generator. The nominal capacity of the engine is 500 horse-power at a speed of 150 revolutions per minute, 150 pounds pressure at the throttle and 26 inches vacuum. The cylinders are so proportioned as to give the high ratio of 1 to 7.33. No steam jackets are used, but a vertical tubular reheating receiver is placed in the steam passage between the two cylinders, steam being admitted to the high-pressure cylinder through triple-ported valves of the Corliss type, working in chilled-iron bushings, the governing being accomplished by a centrally-balanced inertia shaft or wheel governor. This governor is so constructed that it is practically balanced in all positions, being made with two inertia arms, the centers of gravity of which move in harmony with each other about the center of rotation, the balancing feature avoiding surging or violent action under all conditions of operation. This operates, by means of a bell crank, the steam admission valves of the high-pressure cylinder only, and is so arranged as to decrease the lead at the earliest point of cut-off. The steam valves of the low-pressure cylinder are controlled by a fixed eccentric, so arranged that the cut-off in that cylinder can only be varied when the engine is not running, and remains constant under all

conditions of load and pressure. The exhaust valves of both cylinders are of the Corliss type, operated by a single eccentric through the medium of a peculiar arrangement of rocker arms and bell cranks. The engine is of the inclosed self-oiling type, of which the Harrisburg Foundry and Machine Works make a specialty.

A striking feature of a test recently made of this engine is the peculiarly flat efficiency curve under varying loads. This curve seems to have been kept flat by the failure of steam consumption to go up under light loads, rather than by a failure to go down under normal load, the consumption at seven-tenths load being only 12.33 pounds and at full load 12.66 pounds per indicated horse-power, while at one-sixth load it increased to only 14.42 pounds. The conclusion must be that the cylinder condensation loss was not materially increased with the lighter loads and greater ratios of expansion. It is declared by engineering experts that it will be an exceedingly interesting and important fact if future developments establish that the flat curve is characteristic of the high-speed four-valve type of engine, of which much was expected in the early nineties, but which has not heretofore developed any notable commercial advantages.

Induction-Type Generator.

The Stanley Electric Manufacturing Co. is exhibiting in the Machinery Hall one of its 600-kilowatt two-phase 60-cycle 277 R. P. M. standard inductor-type generators, which is direct connected to a Williams engine. This generator is similar to the type which is in use on the famous transmission lines of the Pacific coast, where they are transmitting power for a distance of 250 miles. Among the many interesting features in the construction of this machine one will notice in general its simplicity, the absence of slip rings, the fact that there are no wires on the revolving element, and the general mechanical design of the machine. The size and construction of the bearings in this machine are particularly noticeable, and show it to be a very liberal size. These details make it appear as a generator of very long life, and, in fact, generators of this type, it is claimed, have been in operation for periods of 11 years with absolutely no repairs or trouble whatever. This generator is carrying the patrol arc lights on the grounds. It has handled its load perfectly since it was first put into operation.

The generator is equipped with a separate phase-regulating device, which is an exclusive patent of the Stanley Electric Manufacturing Co. By this device the regulation of phase pressures independently is accomplished by changing the effective turns on the armature. At one end of the winding of each phase are several regulating coils, in which taps are brought out to suitable regulator heads, which are mounted on the terminal board fastened to the machine. Hand levers on the terminal board permit cutting in or out turns of the regulating coils, thus raising and lowering E. M. F. of either phase. This device gives a regulation of 15 to 20 per cent. of the total voltage of the machine, allowing for the maintaining of even pressures on both phases over a wide range of varying loads on each phase. These regulator heads can easily be mounted upon a switchboard, giving full control of the voltages of phases at this point.

The general design of this machine can be easily seen by visiting this exhibit, for the generator, as above mentioned, is direct coupled to the engine.

At the Philippine Reservation the Stanley Company has sold to the government four two-phase 60-cycle generators of different capacities, two 160-kilowatt, one 140-kilowatt and one 190-kilowatt, all running at different speeds and coupled to different makes of engines. All of these generators will be run in parallel, and not the slightest difficulty is anticipated, as the Stanley inductor type of generator can be synchronized under conditions where other machines have failed.

There is also installed a switchboard here, consisting of three feeder panels, four machine panels and one exciter panel, equipped with the Stanley Electric Manufacturing Co.'s instruments and switches. This switchboard has many interesting new devices mounted thereon. The exciters for the generators are all engine type, and the complete plant, including boilers, pumps, etc., is of the most modern type, and will well repay investigation by anyone interested along these lines.

Economy in Stoking.

The American Stoker Co. of Erie, Pa., has on exhibition at the Palace of Machinery two of its make of stokers which show the principles of the machines' construction. One is of the larger type made by the company, which is partially bricked up to show the application to a boiler furnace, and the other is a special forge—one of the smaller ones made—which shows the application of the stoker for that purpose. In these machines the coal is fed into the furnace from a hopper by a screw conveyor, by which it is pushed up into the fire overflowing upon the side grates. The coal in its upward course is brought in contact with fresh air, which mingles with the released gases and causes them to ignite, thus resulting in a gradual coking of the coal. Every pound of coal fed into the hopper passes through this gas and coke-making process, so that practically perfect combustion is obtained by its system of stoking, even from the poorest grades of coal.

Water Meters.

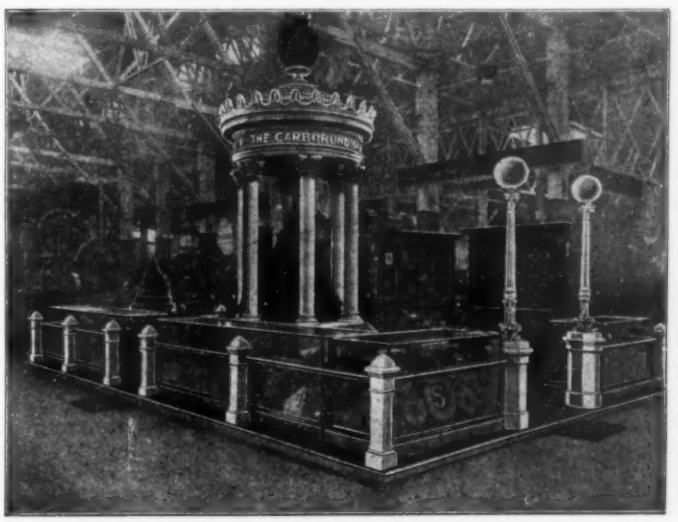
In block 35, Machinery Hall, the Hersey Manufacturing Co. is exhibiting a sample of each type and size of water meters which it makes, the display including 50 different meters. There is also shown a very complete line of water-meter appliances. In an oak cabinet are arranged sectional models of its disc, rotary and torrent meters, shown in operation just as though water was actually passing through them. This effect is brought about by means of a vertical shaft which extends up back of the meters, they being connected to the shaft by chains which run from the main pinion of the intermediate train of the meters to a sprocket wheel on the shaft. This shaft is driven by a five-eighths-inch disc meter, through which water is actually passing. At the entrance of the exhibit there is constructed an arch of architectural iron work and water meters, which, in conjunction with the arrangement of the rest of the exhibit, makes a very attractive display.

Made of Carborundum.

The whirling pyramid of carborundum crystals, scintillating all the colors of the spectrum, is a center of interest in the Machinery Building, together with the innumerable evidences about it of what carborundum is doing to help men do their work in the world. This is the attractive exhibit of the Carbodundum Co. The exhibit presents numerous articles made of carborundum, that universal abrasive used in the arts, in industry, in the home. In the World's Fair carborundum exhibit, an illustration of which is presented herewith, the special design has been to show the many and important uses to which carborundum is put. A big book of testimonials is shown, made up of letters from the greatest concerns in every branch of industry. And then there are actual things that have been done. There is a 24-inch chilled-iron roll, from the J. T. Noye Manufacturing Co. of Buffalo, that has been partly ground down, so you can seen just how the carborundum wheel has done its work.

The Noye Company started experimenting with the use of carborundum wheels in place of the steel tools, and the figures are interesting. They use for this work a wheel 10 inches in diameter and one inch thick. One of these wheels removed, during its life, 8710 cubic inches of iron, the cubic contents of a 10x1-inch wheel being 60 cubic inches. A carborundum wheel will grind a roll 9x36 inches in four and a half hours. To accomplish this same work with a steel tool it takes 13 hours.

There is a soft-rubber roller, from the American Wringer Co., going from hard to soft, that has been fashioned by carborundum. Shoes are shown from manufacturers in all parts of the country which have had their heels and soles fashioned and smoothed by carborundum. The International Harvester Co. sends a section of mower knife sharpened with carborundum, and granite cutters in all parts of the world, Scotland, Sweden, Norway, Canada and this country, send samples of the beautiful work they have done with carborundum. The Wiard Plow Co. has written that, by actual record, a wheel 22 inches in diameter and two and a half inches thick will grind 54,000 plow points, 450 tons of castings and 5000 harrow teeth before wearing out.



THE CARBORUNDUM EXHIBIT.

Carborundum products are all put through most exacting tests before shipment from the factory, and how this work is actually done is shown in the exhibit of the Landis Tool Co., adjoining the carborundum exhibit. Here the whizzing wheel surely cuts its way into the hardest steel. In the Mining Building, as a part of the Niagara Falls exhibit, there is another carborundum exhibit showing a full line of products.

Boring Machine.

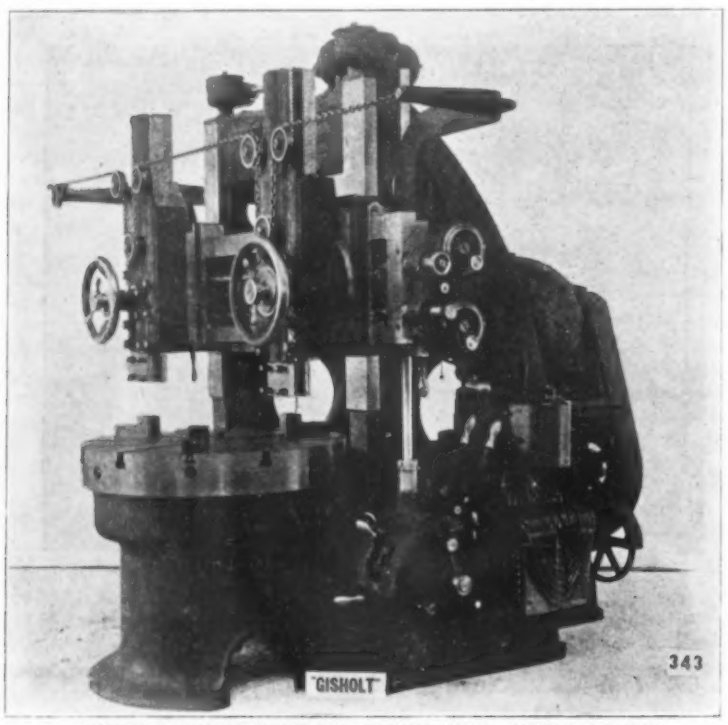
The Gisholt Machine Co. of Madison, Wis., has on exhibition eight machines—three vertical boring mills, being a 42-inch, a 52-inch and a 60-inch; a horizontal boring mill in the 60-inch size; three turret lathes in the 21-inch, 28-inch, standard lathes, and the big-bore turret lathe, having a five-inch hole in the spindle and adapted for finishing large work from the bar. The company also exhibits the universal tool-grinding machine, for the grinding of lathe and planer tools. The 42-inch vertical boring mill is illustrated herewith. The vertical mills present many new and novel features in the line of devices for rapid and accurate operation. The general impression first given on looking at the vertical mills is their simplicity, together with excellent general lines. An examination into the details of operation shows that the designer had well in mind the matter of making the machines easy to operate by placing all levers for various movements of head, table control and feed within easy reach of the customary position of the operator. The headstock of these machines is of friction back-geared type, and is adaptable either to belt or motor-drive, no extra floor space being required where the motor-drive is used, the motor being mounted directly on the headstock. An unusual and commendable arrangement is the device provided for the automatic tripping of the feeds. The heads are independent, both as to feed and direction, and at either end of the cross-rail may be seen a feed-tripping disc for setting the trips so that the feed may be automatically stopped at any predetermined point. These mills are also provided with micrometer index dials on all feed screws and read to 1-1000 of an inch. The feed mechanism is provided with a safety-friction device which prevents any injury to the mechanism from careless handling or the jamming together of the heads. As a result of the peculiar friction headstock, the table is absolutely under control of the operator, and may be put in full operation or moved a fractional part of a revolution by the simple movement of one lever.

There are some marked differences between the 42-inch and the next larger size shown, the 52-inch, and the 60-inch. In these larger sizes the movements of the heads are controlled by power, but, of course, may be moved by hand if desired. A unique and effective power device for the rapid movements of the heads, either vertically or horizontally, is one of the newer devices. By this quick-traversing device the heads may be thrown from the rapid traverse to the regular feed by the simple movement of one lever. Thus, where there is a cut at the outside diameter of a large piece, and another one near the center with an intervening space, which under ordinary circumstances would require the traversing of the heads by hand or allowing them to run in on the regular feed, by this device the one lever enables the operator to cut out the feed in the rapid traverse and run the head to the next cut. The release of the rapid-traverse lever automatically sets the feed for the cut when it is desired to continue. The cross-rail is very rigid and may be rapidly raised and lowered by power. These mills are manufactured in five sizes, ranging from the 34-inch to 64-inch.

The horizontal boring mill is a machine swinging 60 inches, carrying a four-inch boring bar and having a six-foot table on which rests a carriage 42½x25 inches. It is

fitted with friction headstock, double back-geared, and with the three-speed self-oiling countershaft furnished with this machine gives 27 changes of speed. The handwheel and levers are most conveniently arranged so that the operator has perfect control of his machine from either side. The boring bar is held by means of a very powerful friction clamp, and is much more rapid and more quickly adjusted than on any other makes of boring mills. The machine is screw-cutting without special attachments being required, and the feed mechanism is so arranged that all the United States standard threads from two-inch to 28-inch may be cut. There are eight feeds obtainable. The power-elevating mechanism for the table is another device which is especially noticeable. By means of it the operator can accurately raise or lower the table to any desired position, while with the power arrangement ordinarily employed on horizontal mills the exact location can only be approximated.

The turret lathes are naturally the best-known product of the Gisholt Machine Co., because they are its first machines. This company is entitled to the name of "pioneer" in this field. These lathes have always appeals to the man interested in systematizing his toolroom. The time usually consumed by mechanics in grinding lathe and planer tools, both to their dissatisfaction and to the loss of their employer, owing to the fact that their machines must stand idle while they are engaged at the grinder, is a recognized fact, and this machine was designed for the express purpose of grinding tools without requiring expert labor. A universal toolholder is provided in which the tool is inserted and permits the grinding at any angle. A standard of angles may be established and every tool may be ground at exactly the same angle. The tools may be indefinitely duplicated. The great advantage of this machine lies in the fact that it does not require more than ordinary labor to run it, and a bright young man with one of these machines can keep a constant supply of sharp tools on hand.



GISHOLT 42-INCH VERTICAL BORING MILL, MOTOR DRIVEN.

been on the market 15 years, and have become recognized as the standard machine for chucked work or such as requires boring, turning and facing, also threading when desired. The advantages lie in the fact that multiple tools are used on pieces run through in lots, so that the time consumed in the setting of tools is distributed through a considerable number of pieces. In addition to this, the machine is doubly effective in that several tools may be employed to cut at one time; thus boring and turning or turning and facing may be done at the same time.

The 24-inch machine is the one commonly known at the big-bore turret lathe, as it is provided with a five-inch hole through the spindle and is especially adapted for finishing work from the bar, though in addition the machine will also do chucked work. The great range of this lathe has made it very popular with railroad and engine builders.

The turret lathes have been particularly successful in a large range of work for which they have been adopted. Many thousand different parts have been turned out on these machines both in this country and abroad.

The universal tool-grinding machine shown. A considerable section of the Laclede Fire-Brick Manufacturing Co.'s business is the making of gas retorts, settings and furnaces, as well as linings for water-gas apparatus, and the first-mentioned feature finds adequate representation in the two complete benches which form the most impressive features of the display.

One is a bench of inclined nines, embodying the best features of the Andre Coze patents, which are controlled in the United States by the Laclede Company. The other bench is a half-depth recuperative bench of six horizontal retorts, and both it and the bench of inclined nines are equipped with all necessary iron work complete.

The balance of the large space is filled with an exposition of the company's manufacturing resources. A cone of vitrified pipe of graduated sizes and various shapes occupies a conspicuous position in the center of the enclosure, which is separated from the building aisles by a wall of basket-work fire-brick, flanked by columns composed of retorts, worked in connection with minarets of vitrified pipe and reducers.

Several large tables are used to show the various grades and shapes of standard nine-inch bricks, tiles, etc.

Architects and builders generally should be interested in the Laclede display of hollow-tile fireproofing, showing various sizes of partition, book and floor arch tile as used in the construction of many large fireproof buildings.

Various sizes and styles of flue linings, chimney pipe and chimney tops are shown, while an artistic and comfortable effect is secured by a generous distribution of lawn vases filled with growing plants, rustic stumps and lawn chairs, etc., all of the company's manufacture.

It may be interesting to know that the company was established in 1844 and incorporated in 1869, having a capital and surplus of $1,250,000 and owning 123 acres of land in the center of the celebrated Cheltenham clay district, St. Louis, where are located its three immense factories, 40 large kilns, clay mines, various stock sheds and storage yards, with eight miles of private switches connecting with the Missouri Pacific and Frisco-Rock Island systems, giving exceptional and unexcelled facilities for handling the annual product of 100,000 tons or over 5000 carloads.

Fire-Resisting Brick.

A Variety of Electric Motors.

One of the very interesting electrical exhibits is that of the Commercial Electric Co. of Indianapolis. It consists of a complete line of standard semienclosed-type motors from 1¼ horse-power to 35 horse-power, several of which are shown in operation. Application of these motors to machine tools are also shown, and a special feature is made of the company's variable-speed motors for driving machine tools or for other purposes in which a wide range of speed is required. These motors, as regularly constructed, give a range in speed of four to one and a constant horse-power at all speeds. The torque or pulling power increases as the speed is decreased, so that the heaviest cuts may be taken at the slowest speeds, which is the usual requirement for the maximum output on nearly all machine tools. This is accomplished by the use of a double-commutator armature, in which a different number of turns per commutator segment is used on the two ends. By using these two windings independently or in series, three different speeds are obtained with maximum field strength, and with each of these armature combinations the field is weakened in four steps, giving intermediate speeds which are practically uniformly spaced, making a total of 12 speeds between the highest and lowest.

As the maintenance of constant horse-power at all speeds is a feature possessed only by the Commercial system, the special apparatus is exhibited to demonstrate this important point. The apparatus consists of a three-horse-power variable-speed motor with pony brake attached, by which the actual power delivered and current consumed can be carefully measured at all speeds, and the efficiency and constancy of the power thereby demonstrated.

A practical application of this system is shown by the exhibit of a 7½-horse-power motor direct connected with a No. 2 Barrett cylinder-boring machine which is shown in actual operation on the large castings, where cuts of various diameters can be taken at any required speed.

The Commercial Electric Co. also shows a variable-speed motor in which field control alone is used, this being attached to a 20-inch engine lathe of the American Tool Works Co. The current for operating these machines is furnished by a 10-kilowatt 350 R. P. M. engine-type generator, direct coupled to a Meriam-Abbott gas engine; also, this machine generates current at 220 volts for operating the motors and machine tools, and also the medium of a Commercial balancing set or equalizer supplies light and power to this and neighboring exhibits on the 110-220-volt three-wire system.

Leather-Working Machines.

In the interesting working exhibit of the New York Leather Belting Co., Machinery Hall, the Vaughn Machine Co. has installed six of its hide and leather-working machines, which form a very important feature of the Belting Company's exhibit. The Vaughn Company's main offices are at Peabody, Mass., with branches at Boston, Philadelphia and Milwaukee, and with European headquarters at Frankfort, Vienna, Leicester and Lyon, and agencies in Italy, Spain, Belgium, Finland, Russia, Australia, New Zealand, New South Wales and Argentine Republic. Having at hand every facility for the design and manufacture of machines for the special requirements of individual purchasers, and with experience in this line of work probably greater than any other manufacturer in the world, the presence of the Vaughn Machine Co. at the exposition is of interest to belt manufacturers not limited solely to the machines on display. The six machines seen at the New York Leather Belting Co.'s exhibit are a No. 5 power-belt press 25x36, a No. 2 stripping gauge, a rotary stripper, a 24-inch belt reel, one of the largest made; a 36-inch finishing machine, the latest model and the best machine of its kind yet produced, and a 36-inch feed-roller scarfing machine, the company's latest and best type of such machine, and being in finish and appearance greatly superior to any previously built by them.

Oil-Mill Equipment.

In block 67, near the center of the Agricultural Building, with the special cotton display, the Cardwell Machine Co. of Richmond, Va., makes a display of a full equipment of machinery for a 40-ton oil mill. Exhibits have been made of models and single machines, but never before has been shown a full outfit for a mill. The 30-inch huller is of the heaviest type, and so strongly built that it is not liable to be wrecked by a nut or bolt getting into it. It is closed up at the back and has a ventilator to carry off the dust. Roller bearings are used under the rolls and greatly reduce the power required to drive them. A very compact and heavy battery of cookers and an automatic farmer that makes a perfect cake, a press that is strong enough to stand abuse, and other machines with special features are in the exhibit.

This firm issues a catalogue describing its machines for cotton-oil mills from five to 100 tons daily capacity, and is also prepared to furnish machinery for the extraction of oil from corn, peanuts, cocoanuts, flaxseed, sunflower seed, etc.

To Operate Electric Novelties.

One of the most interesting displays of electrical apparatus is that of the Ewing-Merkle Electric Co. of St. Louis. It is a combination of exhibits in the company's charge located in section 14, Electricity Building. In choosing the items for exhibition the company aimed at securing such as would demonstrate in a modern way the application of electric current for various uses.

The company shows this application by first generating its current with a modern gas engine with direct-connected generator. The current is generated at 250 volts. It passes through a modernly-arranged switchboard on to an equalizer, which splits the current to three-wire 125 and 250 volts. This three-wire current is carried back into the switchboard and there distributed to the various sources of consumption within the space. From this switchboard is lead a 220-volt current to operate the various motors into

the Commercial Electric Co.'s exhibit. Then other circuits are led off at 110 volts to operate Jandus arc lamps, Jandus desk and gyrofans, and Sterling motor direct-connected to candy-pulling apparatus. Same current is used to operate electrical novelties, as street cars. Other circuits are led off to be used in demonstrating the Phometheus heating apparatus. In this way the company shows the application of current for various power purposes, for lighting purposes, for heating and for cooling purposes, also for the operation of toys. The exhibit furthermore includes a complete line of Sumter telephones and sundry apparatus of that class. For that purpose battery current is used. It has been the company's purpose to confine itself to a very limited space, yet show in a complete way these various actual applications of electricity, all in actual operation.

This display is to teach and educate not only the electrical fraternity, but the public in general, of the various forms and uses of electricity in commercially practicable ways. A neat yet substantial booth has been erected in order to add effect to the general display and to help

THE EWING-MERKLE ELECTRIC CO.'S EXHIBIT.

lead on the eye of the general public, and to reinforce this effect the exhibit is surrounded with a substantial and artistic skeleton enclosure made up entirely of Safety Armorite Loricated Conduit, which gives the display an outer finished effect, besides showing flexibility of that material. This skeleton enclosure is decorated with arc lamps, incandescent lamps and fans, and with appropriate glass signs marking the individual exhibitor's divisions. A corps of experienced young men is constantly at the exhibition to enlighten the public on any individual points bearing on the exhibits.

In making up the general design the Ewing-Merkle Electric Co. has endeavored to work out the novel ideas so as to make the entire exhibit most inviting and attractive to the masses, exhibiting certain items, however, which would be likewise interesting to the mechanic, engineer or scientist.

Variety in Mining Machinery.

The Howells Mining Drill Co. of Plymouth, Pa., has a representative exhibit of mining drills in block 10-B, Mines and Metallurgy Building. It manufactures 36 different styles of mining machines for boring coal, rock, salt, gypsum, fire-clay, slate, soapstone, etc., but as it was not found practicable to show all the different styles, its aim has been to display a general line of representative machines, which give a very fair idea of the scope of the products manufactured by the company. The machines are made to be operated by hand and compressed air, and some idea of the variety is gained by the fact that they range in price from $3 to $200.

Giussani Wood-Preserving Process.

Every year the increase in the use of wood, with the corresponding decrease of timber lands, is making the problem of wood supply more and more a serious one. That scientific forestry will play a very important part within the next decade in preventing the utter annihilation of our forests there is no doubt. With the ever-increasing demand for timber, however, even scientific forestry will not immediately solve the problem. In this country, as abroad, up-to-date forestry methods must be supplemented. This can be accomplished, though, but in one of two ways. An equally cheap material must be substituted or wood must be given longer life by warding off decay. That decay can be stayed by chemical means and wood thus treated remain in perfect condition many years after another piece of the same wood untreated has decayed is a well-known fact. Because of this, then, before substitutes for wood are considered methods of preserving it should be carefully studied.

Of the many methods of preserving wood, probably one destined to meet with the greatest success is that known as the Giussani process, which was discovered by Tomaso Giussani of Milan, Italy. So valuable has this process proved that last year Giussani was awarded by the commission of the Royal Institute of Science and Letters of Lombardy the Bambrilla prize, which is only given in recognition of inventions that are thought to be of peculiar merit and lasting benefit to the home country of the inventor and to the world at large. However, the Giussani process not only owes its value to the chemical treatment peculiar to it, but also the mechanical means by which the former is brought about. It is, in fact, solely upon the excellence of the apparatus used in subjecting wood to chemical treatment that this process can lay any claim to originality.

The two chemicals used in the Giussani process are creosote and chloride of zinc. That, however, these two chemical substances have the power of preserving wood against decay and wood-destroying insects was known long before Guissani's process came into existence. But as often happens with regard to well-known facts, this Italian was the first to combine them in the most effective way.

Giussani's process consists of three important steps. In the first the wood is immersed in creosote heated to a temperature of 140 degrees C. Here it remains, as in the case of railroad ties, from three to four hours. In this hot bath, which is so constructed as to prevent as little heat radiation as possible, the cells of the wood are opened. Humidity and sap are expelled from the cells, leaving a partial vacuum, and the condensed humidity collects on the roof of the bath and is from there carried off by means of gutters arranged along the inside of the creosote tank. The tie is thus prepared for the second treatment, where it is again immersed in creosote, but this time in cold creosote. For 10 or 15 minutes the tie is left in here, and it becomes impregnated with creosote during this time by force of atmospheric pressure sending the creosote on into the partial vacuum in the cells. The treatment is completed by finally introducing the tie into a bath of chloride of zinc, where the action of the atmospheric pressure is to drive the creosote further in and itself also thoroughly permeate the wood with the zinc chloride.

From the beginning to the end of the process it is entirely automatic. A plant capable of treating 3000 ties in 24 hours can be established at a very small cost as compared with former methods. In the Giussani process the ties are arranged upon a carrier, and by means of hooks operating on a link belt are carried to the first tank which contains the hot creosote. The cover of the bath is automatically lifted and the wood is given its first treatment. After remaining in here it is conveyed by the same hook belt to the cold creosote tank, the passage from one tank to the other requiring only six seconds, and then finally to the zinc chloride, and thence to a platform from which the ties are taken and put aside until dry.

But aside from the automatic handling of the ties whilst they are being subjected to chemical treatment, the Giussani process has the advantage that by it the amount of chemical absorbed can be easily determined and regulated. This is obviously an important feature, inasmuch as it prevents more creosote and chloride of zinc being absorbed than absolutely necessary for preservation. Money is saved, too, by combining zinc chloride with creosote. By using these two instead of creosote alone the Giussani is cheaper than any other process now being used to preserve wood. The average cost of treating a tie is from 18 to 20 cents per tie, which covers not only the cost of handling, but, in chemicals, 10 or 12 pounds of creosote and from 35 to 40 pounds of 2½ per cent. zinc chloride solution.

To railroad men this wood-preserving process of Giussani's cannot help but be interesting when it is related on the best authority that beechwood ties treated in this way are kept in a perfect state of preservation for from eight to ten years, whereas deleterious natural agencies destroy in less time than three years untreated ties and sleepers of the same wood. An instance of the rapid decay of untreated beech ties is cited in the report of Chief Engineer Brumsotti of the Adriatica Street Railway Co. of Florence, Italy. But it is also stated in this report that the Giussani-treated ties, which were put down at the same time as the untreated ones, were found, when the comparison was made, to be in perfect condition. Instances like this taken from the report of reputable engineers, together with the favorable report of a commission especially appointed for the purpose, have resulted in the Italian government, which owns nearly 75 per cent. of the railroad mileage in Italy, adopting the Giussani process for treatment of all ties used on the roads of the Italian government.

The interest of American railroad men in this process is attested by the fact that among those who have studied this exhibit in operation may be mentioned President Ripley of the Atchison, Topeka & Santa Fe, President Fish of the Illinois Central, Chief Engineer Richard of the Pennsylvania Railroad, and the chief engineer of the Wabash.

The Bureau of Forestry, which has an experiment station in the Mining Gulch at the St. Louis Exposition under the direction of Dr. Herman von Schrenk, is conducting investigations as to the effect of steam upon wood fibers, and in conjunction with this, testing the Giussani process with American woods. Dr. von Schrenk, who saw the process at work in Italy, is convinced of its superiority in preserving Italian woods, and believes that it will meet with equal success in America. Elaborate tests will be made as to the effect of the hot oil bath on the fiber, which, it is said, is strengthened, and not weakened, by the Giussani process, and also the penetration of creosote and zinc chloride into the wood will be thoroughly gone into. Many of the leading railroad men have visited the plant and are satisfied that the Giussani process is what is needed by all American railroads. The reports of the Italian engineers and others in America who have seen the process in operation on these and other points concerning the Giussani process are highly satisfactory, and the owner of the American and all foreign patents except the Italian, the Consolidated Crosstie Co. of New York, is sanguine as to the outcome of the tests that are now being made in St. Louis.

J. SHARSHALL GRASTY.

Italian Immigrants.

In 1875 there were 393 emigrants from Italy for 100,000 inhabitants of the Kingdom; by 1900 the number had reached 1099 in every 100,000, and in 1903 there were 1535 emigrants for every 100,000 inhabitants. The total number of emigrants in 1903 was 506,975. Of these 280,413 declared their intention of going to America, and 197,855 came to the United States. Il Vesuvio of Philadelphia, which publishes these figures, commenting upon the movement of Italians to this country, says:

"Of the nations of Europe which have furnished the major contingent of emigrants to the United States, Italy seems to be in the lead in exercising a fatherly supervision over those who have left her confines.

"The Italian peninsula, according to Ferrero, a writer upon sociological subjects, is overcrowded with people, and his fellow-countrymen suffer privations for want of work. On this account the government, in place of opposing emigration, is disposed to favor it, and so has established a special department, with offices in Rome. The jurisdiction of this department embraces the work of regulating the accommodations for emigrants on board steamers, but in reality it is an organization of inspectors who travel about visiting the country in order to observe the manner of life, rate of wages

and the kind of work of which there is need.

"This enables the department to guide emigrants to places where they can most rapidly find employment and good pay. To this fact it is possibly due that a great number of emigrants have come to these States rather than go elsewhere.

"Moreover, a majority of those who come over are familiar with field labor. If, in place of letting these new arrivals stop in populous cities, they could be induced to move on to the farming districts, their comfort and prosperity would be very much more increased thereby.

"In the southern part of the United States there are ample lands to cultivate; there the new immigrants should be directed; there they will find work and riches."

Wants Special Southern Brick.

A well-known Northern construction company which uses large quantities of bricks is desirous of corresponding with Southern brick manufacturers who are prepared to accept orders for special bricks. The company requires that the manufacturer with whom it shall complete arrangements is to have available pure clays, free from loam and lime, and have auger or plunger machinery for producing the bricks continuously, and be equipped with proper kilns so that the bricks can be well and evenly burned. The submitting of samples and all other details can be arranged by correspondence. Southern brickmakers who are interested in this are advised to address "Special Bricks," care of the Manufacturers' Record, and their replies will be forwarded promptly. They are asked to state the nature of their clays, the kind and size of machinery being used and other pertinent facts.

American Machinery Wanted in Italy

The Manufacturers' Record is in receipt of a letter from A. M. Cristoffanini, Genoa, Italy, regarding a lot of American machinery which he asks prices on. Mr. Cristoffanini asks that manufacturers consider the action of German and English firms, which offer goods free at Genoa, including customs taxes, and quote in like manner. Payment is offered one-third on acceptance of order, one-third on consignment and one-third on installation, the installation to be directed by the engineers sent by the sellers. For details regarding the apparatus required, see the Machinery Wanted Department in this issue.

Wants a Water-Power.

The Manufacturers' Record is informed that J. B. Boyd of Huntsville, Ala., is seeking to purchase a good water-power located near some progressive Southern town. A power with mill attached would be given consideration.

Concerning the incorporation of the Missouri, Oklahoma & Gulf Railroad, a dispatch from Guthrie, O. T., says that Horace Speed, J. W. McNeal and M. Luther West of Guthrie, who are among the incorporators, are also stockholders in the Muskogee Union Railway, which the new company succeeds, and in the Guthrie, Fairview & Western Railway Co., which proposes to build from Guthrie to Fairview, O. T., connecting with the Kansas City, Mexico & Orient Railway at the latter point.

A dispatch from Beaumont, Texas, says that C. H. Markham, vice-president and general manager of the Southern Pacific Company at San Francisco, and who was until about a year ago general manager in Texas for the same railroad system, has resigned, and will become general manager of the J. M. Guffey Petroleum Co. at Beaumont.

RAILROADS

[A complete record of all new railroad building in the South will be found in the Construction Department.]

FRISCO SYSTEM REPORT.

Great Progress Shown in New Lines, Traffic, Immigration, etc.

The annual report of the St. Louis & San Francisco Railroad Co. for the fiscal year ended June 30, 1904, shows gross earnings from operation, $26,896,731; operating expenses, $17,756,251; net earnings from operation, $9,140,479; total net income, $10,023,591; surplus carried to credit of profit and loss after payment of interest, rentals, taxes and dividends, including dividends on Chicago & Eastern Illinois Railroad stock, $423,895.

Including the Chicago & Eastern Illinois Railroad, which is now in the Frisco system, the gross earnings from operation were $35,560,774; operating expenses, $23,197,685; net earnings from operation, $12,363,088; total net income, $13,601,743; surplus carried to credit of profit and loss after payment of interest, rentals, taxes, dividends, etc., $781,726.

The St. Louis & San Francisco Railroad alone showed, as compared with the next preceding fiscal year, the following increases: In gross earnings, $2,607,220; operating expenses, $1,880,275; net earnings, $726,845.

The new mileage completed and placed in operation during the year was as follows:

Sulphur Springs Railway, from Scullin, I. T., to Sulphur, I. T., 8.72 miles.

Ozark & Cherokee Central Railway, from Fayetteville, Ark., to Okmulgee, I. T., 143.90 miles.

St. Louis, San Francisco & New Orleans Railroad. The western section of this line, from Madill, I. T. to Ardmore, I. T., 24.6 miles, was completed August 19, 1903. The "Platter Cutoff," from Mead Junction to Platter, I. T., 9.24 miles, was completed November 8, 1903, and the eastern section, from Hope to Ashdown, Ark., 32.97 miles, was completed January 1, 1904. The completed line extends from Hope, Ark., to Ardmore, I. T., 232.73 miles.

Arkansas Valley & Western Railway, from Red Fork, I. T., to Avard, O. T., 175.25 miles. The road was put in operation March 1, 1904.

Kansas City, Fort Scott & Memphis Railway and the Evadale Cutoff, from Evadale to Big Creek, Ark., 16.50 miles, was completed and put in operation May 7 last. A spur track 3.56 miles long was built on the same line from a point in Bates county, Missouri, to the mines of the New Home Coal Co.

On July 1 last the entire mileage (681.10 miles) of the St. Louis, Memphis & Southeastern Railroad and the St. Louis & Gulf Railway was turned over to the company for operation.

The report also describes the trackage agreements with the St. Louis, Iron Mountain & Southern Railway, the Texas & Pacific Railroad and the Illinois Central and the Yazoo & Mississippi Valley railroads, by which it will get a joint use of their tracks, making a line from Memphis to New Orleans, at the same time granting the Illinois Central trackage rights from a point between Aberdeen, Miss., and Jasper, Ala., into Birmingham, Ala., including the use of the Birmingham Belt Line, besides switching privileges into New Orleans. There is also an agreement with the Mobile & Ohio Railroad and the New Orleans & Northeastern Railroad by which the company gets trackage rights from Tupelo, Miss., to New Orleans.

The company put in new steel rails during the year as follows: 4331 tons of 85-pound, 3676 tons of 75-pound, 2166 tons of 70-pound, 1602 tons of 65-pound; total, 11,775 tons. There were also 1,138,509 new crossties and 684 sets of switchties laid during the year. Eight old steel bridges were replaced by eight new steel bridges of heavier weight. The second main track, between St. Louis and Windsor Springs, Mo., 12.34 miles, was completed, increasing the efficiency of suburban train service. A second main track was also built between Monett and Pierce City, Mo., 4.21 miles. There were also built 41.39 miles of passing, yard and industrial tracks. The new mileage added was accompanied by 58 miles of new sidings. Improvements were also made to the permanent way by new ballasting.

The company purchased and acquired during the year 169 locomotives, 27 passenger coaches, 6 chair cars, 134 box cars, 736 coal cars and 225 flat cars, besides sundry other cars in both passenger and freight service. At the end of the year the company had 731 locomotives, 416 passenger cars and 21,679 freight cars.

There has been a marked increase in immigration into the States and Territories tributary to the company's lines during the fiscal year, and there were erected during the year at previous points along the lines of the system 269 new industrial plants, representing over $5,000,000 of invested capital and employing fully 6000 men.

JACKSONVILLE TERMINAL.

Atlantic Coast Line Awards Contract for Extensive Piers and Yards.

Mr. M. Riddle, Jr., assistant chief engineer of the Atlantic Coast Line, writes the Manufacturers' Record from Wilmington, N. C., that the company has awarded a contract for the work in connection with its proposed export terminal at Jacksonville, Fla., to Mr. William T. Cotter of Jacksonville. The work involves a sawtooth wharf 2180 feet long and a large amount of track work.

The advertisement requesting bids on this work stated that it would require approximately 250,000 lineal feet of piling, 2,000,000 feet (board measure) of lumber and 50,000 cubic yards of earth excavation.

It is reported from Jacksonville that the wharf plan provides for the construction of 10 piers, each running out from the shore line at an angle of 45 degrees, more or less. One pier will have a frontage of 325 feet, another of 210 feet, six of 116 feet each, one of 119 feet and another of 300 feet. The river along the piers is being dredged out to an ample depth for any vessels loading at the piers. It is further stated that in addition to the sawtooth wharf there will be a pier 300 feet long with a pierhead of 150x75 deep, with three tracks extending out on the end of the pier.

The cost of these improvements is estimated at not less than $1,000,000, as, in addition to the piers, the yard work will be extensive and a new avenue about three-quarters of a mile long is to be opened.

COAL RIVER & WESTERN.

Wm. C. Sproul of Chester, Pa., Purchases a One-Half Interest in the Road.

Senator William C. Sproul writes from Chester, Pa., to the Manufacturers' Record: "I have purchased for myself and my associates a one-half interest in the Coal River & Western Railway, which owns a line from St. Albans, W. Va., up Coal river to Briar creek. It is not our intention to make any extensions of any great moment at the present time, although we do expect to put a bridge across Coal river at the forks to get up Little Coal river as far as Cobb's creek, where myself and associates own 13,000 acres of land."

A report from Charleston, W. Va., headquarters of the company says it has 25 miles of line in operation. Gen. C. C. Watts of Charleston, president and general manager of the company, is said to have a one-quarter interest, and J. Morgan Olcott of New York another quarter, the balance being held by Senator Sproul and those associated with him.

The holdings purchased by Senator Sproul were owned by W. A. Lynch and Austin Lynch of Canton, Ohio; J. W. Cassingham, H. C. Herbig and W. G. Hoy of Coshocton, Ohio; E. E. Fox and J. M. Seese, Massillon, Ohio; J. W. Warwick, C. E. Sullivan and Charles Zettlemeyer of Cleveland, Ohio. They are still owners of 12,000 acres of land on Rush creek, on which coal mines are to be developed, this being in the region reached by the railroad.

LOUISIANA & ARKANSAS.

Gratifying Gains Displayed by the Annual Report—New Line Built.

The Louisiana & Arkansas Railway's annual report for the fiscal year ended June 30 last shows remarkable progress. The gross earnings were $704,671, increase $72,137, or 32.32 per cent.; operating expenses and taxes $487,795, increase $116,089; net earnings $216,876, increase $56,048, or 34.85 per cent; total net income $241,062, increase $62,392, or 34.92 per cent.; surplus $115,457, increase $6814.

As compared with the previous year, the average length of road operated was 147 miles against 127 miles. Last December an extension of about 40 miles, from Winnfield to Jena, La., was made, but it has not yet been informally opened for traffic, and its earnings have been credited to the cost of construction. During the year 75-pound rails were laid on 35 miles of track, replacing 60-pound rails, and the average weight of rail on the 147 miles of line operated was increased from 64.80 pounds to 68.36 pounds.

Improvements were also made in the way of ballasting, changes in grade and alignment and widening of cuts and fills. The heavier engines acquired have made possible a more economical handling of freight. The average trainload, including company freight, was 213 tons, as compared with 174 tons in the preceding year.

Passenger earnings show an increase of 37½ per cent. and freight earnings an increase of 30 per cent. The freight earnings per freight-train mile averaged $3.49, as against $2.99 for the previous year. Seven locomotives were added to the equipment.

Along the line during the year several lumber mills, cotton gins and other factories were built. The number of farmers shipping over the road also largely increased, and as compared with the previous year, the movement of agricultural products increased 29 per cent., while manufactures increased 45 per cent. To increase the number of farmers along the line, R. L. Pritchard has been employed as industrial agent to induce immigration.

DULUTH TO GALVESTON.

E. D. Steger of Bonham, Texas, says the Interstate Railway Is a Certainty.

Mr. E. D. Steger of Bonham, Texas, president of the Denison, Bonham & New Orleans Railroad, and who is also prominently connected with the Interstate Railway Co., which proposes to build a line from Duluth, Minn., to Galveston, Texas, is quoted in the Dallas Times-Herald as follows:

"We intend building an air line from Red river to the Gulf, and practically an

air line all the way through from Duluth. The road is a certainty, as every dollar of the $78,000,000 has been subscribed. I am in receipt of cablegrams urging Colonel Simpson and myself to be in Paris at as early a date as possible, and we will both sail very soon for France. The names of the backers of the enterprise will be withheld from the public for the present, but they have all the money behind them they need."

Mr. John N. Simpson of Dallas is said to be the financial manager of the enterprise.

A NEW COAL ROAD.

Virginia & Southwestern Proposes to Haul Fuel to Tidewater.

The incorporation of the Virginia & Southwestern Railway is reported from Richmond, Va.; capital $1,000,000 to $10,000,000. The line is to be built in Lee, Wise, Scott, Wythe, Tazewell and Giles counties, and will extend from some point on the Tennessee boundary to a point on the Virginia & Southwestern Railway in that State.

It is reported that one of the directors said that John D. Rockefeller and other capitalists are back of the plan, and that the new line will within three years deliver coal in large quantities at some point either on Hampton Roads or the Chesapeake bay. It is stated that this road will develop coal fields of remarkable richness.

The directors of the company are Oliver H. Payne and Grant B. Schley of New York, Walter Ferguson and Henry K. McHarg of Stamford, Conn.; John B. Newton, J. Bewley and D. D. Hull, Jr., of Bristol, Tenn.

The Virginia & Southwestern Railway Co. now has a line in Tennessee extending from Bristol to Inman, 70 miles, and from Bristol to Mountain City, 58 miles. Henry K. McHarg is president, and John B. Newton is vice-president and general manager. D. D. Hull, Jr., is solicitor.

New Orleans to St. Bernard.

Mr. William P. Curtis, vice-president and general manager of the Borgnemouth Realty Co., New Orleans, writes the Manufacturers' Record that he and others are individually interested in the proposed electric railway from New Orleans to St. Bernard Court House, La. The promoters of the railroad are figuring with the parish authorities for a franchise which will be offered for sale this month. This will cover a distance of about 15 miles from New Orleans through Chalmette, where the Frisco and Rock Island railroads are making extensive improvements, and also through Borgnemouth, where it is expected to locate several large plants within the next year or so. Those interested in the railroad expect to issue about $200,000 in bonds. There is no grading to be done, and only one short bridge to be erected, which makes the estimates for construction very low. As yet, however, a railroad company has not yet been organized.

Kansas-Oklahoma Interurban.

Mr. L. H. P. Northrup of the Kansas-Oklahoma Interurban Railway Co., Arkansas City, Kan., writes the Manufacturers' Record as follows:

"The Kansas-Oklahoma Interurban Railroad will run from Winfield, Kan., to Arkansas City, Kan., 15 miles, and from Arkansas City to Chilocco, Okla., 6½ miles, with 9 miles in Winfield and Arkansas City, making 30½ miles. At Winfield, Kan., we will connect with the following roads: Santa Fe, Florence branch Santa Fe, Southern Kansas, Frisco and Missouri Pacific. At Arkansas City we will connect with the Santa Fe, Shawnee branch Santa Fe, Frisco, Missouri Pacific and Kansas Southwestern. Our surveys, rights of way, profiles, maps and all preliminary work is done, and contract for the grading from Arkansas City to Chilocco is let and work will commence within 10 days. T. V. Hall is chief engineer.

A RAILROAD DEAL.

Macon, Dublin & Savannah Goes to the Atlantic Coast Line.

According to a report from Macon, Ga., the Macon, Dublin & Savannah Railroad, extending from that city to Vidalia, Ga., 92 miles, has been transferred to the Atlantic Coast Line, and T. K. Scott, president of the Georgia Railroad, which is associated with the Atlantic Coast Line, was elected president. The line is standard gauge, with seven locomotives and 265 cars. T. D. Catlin of Ottawa, Ill., was president. Others interested are John M. Stubbs of Dublin, Ga., and Dudley M. Hughes of Danville, Ga.

In connection with the Southern Railway and the Seaboard Air Line, the Macon, Dublin & Savannah road furnishes a route between Atlanta and Savannah.

Natchez & Gulf.

Mr. A. G. Campbell, Natchez, Miss., informs the Manufacturers' Record that the Natchez & Gulf Railroad, recently incorporated, is projected to build 192 miles of line, but that no construction has been done yet. The road will be from Natchez to Gulfport, Miss. The officers are A. G. Campbell, president; J. W. Lambert, vice-president; S. H. Lowenburg, treasurer; W. H. Shields, secretary, all of Natchez; W. W. Hungerford, chief engineer at Gulfport, Miss.

Augusta & Florida.

Mr. W. M. Blount, president of the Union Springs & Northern Railway Co. of Union Springs, Ala., writes the Manufacturers' Record that the Augusta & Florida Railway, recently chartered in Georgia, and of which he is one of the incorporators, has its line graded with the exception of 8 or 10 miles, and G. S. Burchell is engineer in charge.

Railroad Notes.

The Seaboard Air Line Railway, according to a dispatch from Birmingham, will obtain entrance to Bessemer, Ala., by means of a traffic arrangement with the Frisco system.

The Southern Railway has occupied its new terminals in Augusta, Ga., consisting of a new warehouse, freight platform and yard, at the foot of Washington street. The warehouse is 500 feet long and more than 40 feet wide.

The Oklahoma & Cherokee Railroad, recently chartered at Guthrie, will, according to a dispatch from that place, be used to develop the Oklahoma & Indian Territory gas and oil fields. The principal incorporators and stockholders are W. D. Todd, E. E. Allen and P. M. Welkins of Warren, Pa.

The Grand Trunk Railroad of Canada, according to a report from Montreal, has obtained an option on the Detroit Southern Railroad, extending from Detroit, Mich., to Ironton, Ohio, and will, it is said, use it to obtain access to the West Virginia coal fields by means of a connection with the Norfolk & Western Railway.

The Pennsylvania Railroad Co. has ordered 6200 freight cars to be built by the American Car & Foundry Co., the Pressed Steel Car Co., the Standard Steel Car Co. and the Cambria Steel Co. They will include box cars, wooden side gondola cars, steel coal cars and steel coke cars. They will have a capacity of 100,000 pounds each.

TEXTILES

[A complete record of new textile enterprises in the South will be found in the Construction Department.]

Correspondence relating to textile matters, especially to the cotton-mill interests of the South, and items of news about new mills or enlargements, special contracts for goods, market conditions, etc., are invited by the Manufacturers' Record. We shall be glad to have such matter at all times, and also to have any general discussion relating to cotton matters.

The Dan River Mills.

Danville, Va., has for some years been gradually utilizing the exceptionally fine water-power facilities which the Dan river offers to manufacturers. The Riverside Cotton Mills was one of the pioneers in this direction, and its associate corporation, the Dan River Power & Manufacturing Co., is now proceeding with the erection of its big cotton mill, previously fully detailed in the Manufacturers' Record.

About two and one-half miles above the city a great dam of concrete has been built across the river, nearly 1000 feet in length and 25 feet high, with a power-house at one anchorage that is expected to develop at least 5000-horse-power. The energy generated will be conveyed by electricity to the mill proper, which has a commanding situation 200 feet above the river and occupies a 10-acre tract. Inequalities of the land have been cleverly adapted to the needs of the mill, one of the ravines being utilized in forming a reservoir. The buildings are so placed that one siding delivers baled cotton to the upper floors, while another spur removes the finished product from the packing-room in the basement on the opposite side. There will be two mill buildings, forming a letter L, with a separate weave shed in the angle formed. The weave shed is built with a saw-tooth roof, which secures the maximum amount of light without direct sunshine on the workers.

The saw-tooth roof is covered with Warren's Anchor Brand Asphalt Roofing, which is especially adapted for steep pitches. This roofing is made by the Warren Chemical & Manufacturing Co. of New York. Particular attention is paid to fire protection, a complete set of Grinnell sprinklers having been installed by the General Fire Extinguisher Co. of Providence, R. I., and a 10-inch pipe line laid throughout the whole mill yard, with hydrants at close intervals. The Westinghouse Electric & Manufacturing Co. of Pittsburg, Pa., supplied the machinery for electric power and lighting. This apparatus was installed and the plant wired by the Standard Electric Co. of Norfolk, Va.

The whole problem of construction has been an ideal one for a mill engineer, and has been ably solved by Messrs. Lockwood, Greene & Co., Boston, Mass.

The Dan river plant will represent the investment of about $2,000,000. About 43,000 spindles and 1614 looms will be operated at first, to be increased to 80,000 spindles and 2400 looms.

The Bellevue Mill.

Two weeks ago the Manufacturers' Record referred to the incorporation of the Bellevue Manufacturing Co. of Hillsboro, N. C., for manufacturing textile fabrics. The company has now effected organization, electing Shepperd Strudwick, president; Edmund Strudwick, vice-president, and T. Norfleet Webb, general manager, and arrangements are being made to build a cotton factory. The capital stock is $125,000.

The Cotton Movement.

In his report for October 28 Col. Henry G. Hester, secretary of the New Orleans Cotton Exchange, shows that the amount of cotton brought into sight during 58 days of the present season was 3,525,130 bales, an increase over the same period last year of 1,060,813 bales. The exports were 1,770,526 bales, an increase of 618,696; takings by Northern spinners 347,444 bales, an increase of 81,071; by Southern spinners 398,846 bales, an increase of 61,615 bales.

Textile Notes.

The Dallas Manufacturing Co. of Huntsville, Ala., has declared its usual semiannual dividend of 3 per cent.

The Pacolet (S. C.) Manufacturing Co. will either install additional spindles and looms in present building or build another mill.

Mr. Stough of Cornelius, N. C., proposes organizing a company with capital stock of $25,000 for the purpose of building a mill for knitting hosiery.

Swift's Cotton Mill, Elberton, Ga., has begun the erection of an additional building in which finishing machinery will be installed. This company operates 9500 spindles and 174 looms.

It is stated that the Springfield (Tenn.) Woolen Mills has received an order for $40,000 worth of blankets, to be delivered to a jobbing firm in the East. The company began business last spring and has doubled the plant's capacity once.

The Rocky Mount (N. C.) Mills is constructing concrete pits and brick wheelhouse and installing two special vertical Leffel turbine 72-inch wheels of 450 horsepower each. This company is already using two Smith-Morgan horizontal wheels. It operates 3600 spindles.

The Durham Hosiery Mills of Durham, N. C., will establish another knitting mill. The company has purchased buildings formerly occupied by a furniture manufacturing company, and will install machinery for knitting the cheaper grades of cotton hosiery. This will be Durham Hosiery Mills No. 2.

It is proposed to organize the Acworth Cotton Manufacturing Co. for the purpose of building a cotton mill at Acworth, Ga., and temporary organization has been effected with Orlando Awtrey, president; J. L. Lemon, vice-president, and J. J. Northcutt, secretary. A capital stock of $100,000 is contemplated.

The Davis Cotton Mills will be organized to build the cotton factory lately noticed as proposed for location at North Augusta, S. C., opposite Augusta, Ga. A capital stock of $500,000 and an equipment of 25,000 spindles and 800 looms is contemplated. Fine goods are to be manufactured. Further particulars will be announced soon.

QUOTATIONS OF COTTON YARNS.

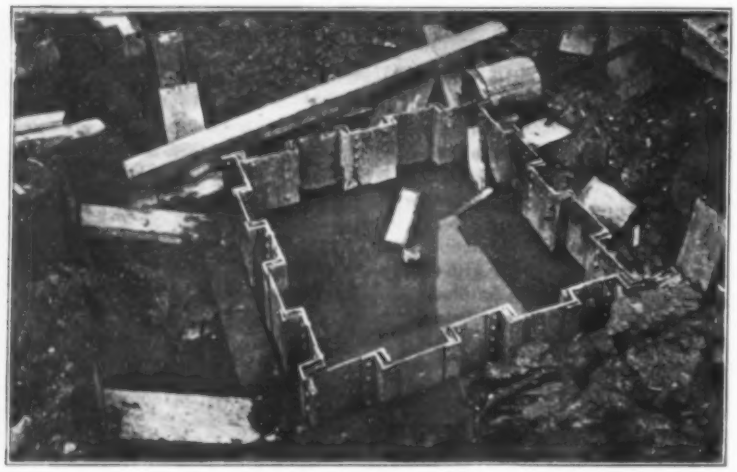
By Paulson, Linkroum & Co., New York, Philadelphia and Chicago. November 1.

No. 10s-1 and 12s-1 warps	16 @ 16½
No. 14s-1 warps	17 @ —
No. 16s-1 warps	17½ @ —
No. 20s-1 warps	18 @ 18½
No. 22s-1 warps	19 @ —
No. 26s-1 warps	19½ @ —
No. 6s to 10s yarn	16 @ 16½
No. 12s-1	16½ @ —
No. 14s-1	17 @ —
No. 16s-1	17½ @ —
No. 20s-1	18½ @ —
No. 22s-1	19 @ —
No. 26s-1	19 @ 19½
No. 8s-2 ply soft yarn	17 @ —
No. 10s-2 ply soft yarn	17 @ 17½
No. 8s-2 ply hard	17 @ —
No. 10s-2 ply hard	17 @ —
No. 12s-2 ply hard	17½ @ —
No. 14s-2 ply	17½ @ —
No. 16s-2 ply	18 @ —
No. 20s-2 ply	19 @ —
No. 24s-2 ply	20½ @ —
No. 26s-2 ply	21 @ —
No. 30s-2 ply yarn	22 @ —
No. 40s-2 ply	25 @ —
No. 8s-3, 4 and 5 ply	16½ @ 17
No. 20s-2 ply chain warps	19 @ 19½
No. 24s-2 ply chain warps	21 @ —
No. 26s-2 ply chain warps	21 @ 21½
No. 30s-2 ply chain warps	22 @ —
No. 16s-3 ply hard twist	18 @ —
No. 20s-3 ply hard twist	19 @ —
No. 26s-3 ply hard twist	21 @ —

MECHANICAL

The Friestedt Interlocking Channel Bar for Caisson Construction.

Great progress is constantly being made in all branches of engineering, and the attention of the Manufacturers' Record has been called to a perfected system for facilitating caisson work in any and every kind of soil, for building foundations, bridge piers and for the numerous other purposes where caisson work is required. No engineer who endeavors to keep his knowledge of his profession fully up to date can afford to be unacquainted with the facts which are presented for his consideration. These facts concern the driving of the Friestedt Interlocking Channel Bar Piling for caisson construction in Marshall Field & Co.'s warehouse, Chicago. The Manufacturers' Record has received a number of photographs from the contractor engaged in sinking these caissons, three views of which may be seen herewith. The site of the building is at the west approach of the Polk-street bridge and the Chicago river.



SINKING CAISSONS BY THE FRIESTEDT SYSTEM.

The foundation piers are of the caisson type, and were planned to penetrate to a depth of 90 to 100 feet. The soil is blue clay, soft sliding clay, quicksand, silt, and a strata of about 15 feet of hardpan on top of bedrock.

The first 50 feet of soil was most difficult to penetrate on account of the soft swelling clay and quicksand stratas which covered the harder stratas underlying. The first caisson was started with a wood curbing seven feet in diameter, with interior adjustable hoops made in two pieces and intended to hold the wood curbing in place. Trouble was not encountered until the 30-foot level was reached, when all attempts to sink the well were blocked by the swelling clay and quicksand, which rose within as fast as it was removed. Polk street 30 feet away settled to such an extent that the bridge had to be closed, owing to a sinkhole apparently caused by the removal of earth.

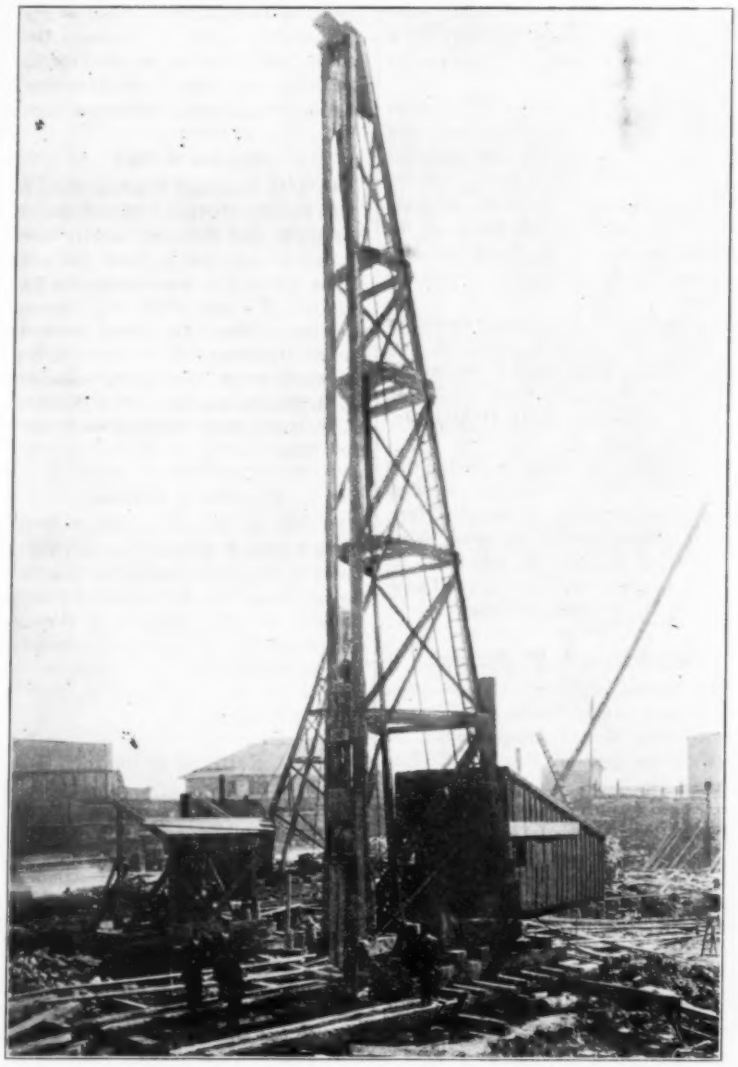
A shield was then constructed of one-half-inch steel plates, circular in form and arranged to assemble in four sections, with a ledge for a hydraulic jack. This shield had a sharp cutting edge and was forced down as the jacks were operated, but this, too, failed, causing a standstill in the work.

Interlocking channel-bar piling was then provided and assembled in the form of a square, the length of the piling being 40 feet, which length was considered ample to pass through the soft upper stratas and a little distance into the harder ones, from which stratas the old method would be employed until rock was reached.

FRIESTEDT INTERLOCKING CHANNEL BAR FOR CAISSON CONSTRUCTION.

A No. 1 Vulcan steam hammer was used to drive the piling, which penetrated with ease the upper stratas that had so effectually prevented the sinking of the caissons.

A cornerpiece was first placed in position between the leaders of the pile-driver, plumbed, and the hammer lowered down onto a steel cushion-hood which rested on the top of the piling, its purpose being to prevent the piling from being battered by the hammer. The weight of the hammer alone—10,000 pounds—sufficed to force the piling down from 25 to 30 feet, and eight or ten blows from the hammer drove it into place. The accompanying illustrations show steps in the work. The one showing the pile-driver with pile between its leaders will serve to verify the statement made relative to the effect of the weight of the hammer when lowered down on the piling. After the driving of a corner is accomplished the ensuing piles are in turn driven until the square is completed. The perfect closing of the square is attained by the use of a special arrangement furnished by the manufacturer.



FRIESTEDT INTERLOCKING CHANNEL BAR FOR CAISSON CONSTRUCTION.

Contractors, engineers and architects are loud in their praise of this form of steel piling, and we are told by those who are in a position to know that this is the advent of steel piling for the construction of deep caissons.

Upon inquiry at the office of the Friestedt Interlocking Channel Bar Co. at Chicago we were surprised to know that this piling is in general use in construction work on a great many railroads in the United States in the capacity of cofferdams for bridge piers.

The American Bridge Co. manufactures and sells this piling. The latter is frequently used in the construction of mine-shafts. When all other methods of sinking have failed it has proven a success; consequently, quicksand has lost its terrors. Some of the largest dams in this country have been constructed with it, it being used either as a core or as an apron, being driven below a core wall to bedrock to prevent water percolation below wall. It has been used in the construction of engine-pits, water intakes, bridge piers, and it is now being talked of as a core or apron for a levee wall.

What a revolution it would make in land values if the Mississippi valley were protected with a steel wall driven so deep that erosion would be impossible! The danger of a crevasse caused by the muskrat and crawfish would be entirely eliminated; millions of dollars would be saved from damage every year by the inundations of the "Father of Waters." It has been predicted that some day the waters of the Mississippi river would be kept within its bounds by engineers who are farseeing enough to know that there is nothing impossible in these days of engineering wonders.

A tunnel or a bridge under or across the British channel, the stormiest body of water in the world, is now considered feasible. Some years ago a canal connecting the Atlantic and Pacific oceans at Panama was laughed at.

If all these things are possible, is it not also possible that the Mississippi river can be held to its channel by a steel wall, which would then protect the lives and property of millions of people from the experiences of the years 1903 and 1904. The question is asked through the Manufacturers' Record. A reply from reliable engineers would not be amiss. The Friestedt Interlocking Channel Bar Co. has its offices at 1408 Tribune Building, Chicago, where correspondence can be addressed.

The Lane Joist Hanger.

The use of joist or timber hangers is recognized by architects and builders as being advisable in all classes of structures. Because of this it is desired to direct attention to the Lane patent joist or timber hanger, an illustration of which may be seen herewith.

It is made of wrought steel of uniform

THE LANE JOIST HANGER.

width and thickness throughout, which gives it the great advantage of uniform strength throughout, with no part weaker than other parts. Its tensile strength can be relied upon. Its strength is calculated to be ample for the safe load allowed on yellow-pine joists from 2x6 inches, six feet long, to 16x18 inches, 15 feet long.

It is stronger than the timber which it supports. The thickness and width of the material in each size is proportioned to the strength of the timber it is to carry, no two sizes being made of the same thickness and width of steel.

Its strength is indicated in a recommendation by F. E. Kidder, a Denver consulting architect, who says that the safe strength of the Lane hanger may be based on 10,000 pounds per square inch.

Its broad and diverging hooks afford a greater area of bearing and a wider hold in the wall or on the header than is possible with parallel hooks of the ordinary widths, and the seat for the joist is also specially large, so that there can be no mashing of wood or wall to cause settling.

It can be spiked to the side and top of the header, as well as to the bottom of the joist, which stiffens and ties the framing or walls together with an anchorage that is self-releasing in case of fire. The spike holes in hangers made of No. 14 to 11 gauges are 7-32 inch in diameter; in No. 10 to No. 7 gauges the holes are 9-32 inch diameter; in No. 6 to No. 00 gauges the holes are 11-32 inch diameter. There is one bottom hole in hangers for joists from two inches to seven inches thick, and two bottom holes in hangers for joists from 8 to 14 inches thick.

It fits close and flat against both joist and header, is very neat and snug in appearance, and has no projecting or unsightly parts.

It is easily applied by the common workmen at a saving of labor and expense, is especially desirable on sills and lintels, and at flues, stairs, elevator and light shafts, roof work, etc., instead of mortising or plain spiking, and can be removed without difficulty or injury to the timbers, should occasion require it. The Lane hanger is manufactured by the W. J. Clark Company of Salem, Ohio. This company has issued an illustrated pamphlet giving all the pertinent and proven facts as to the Lane hanger, together with some important tables of use to architects and builders.

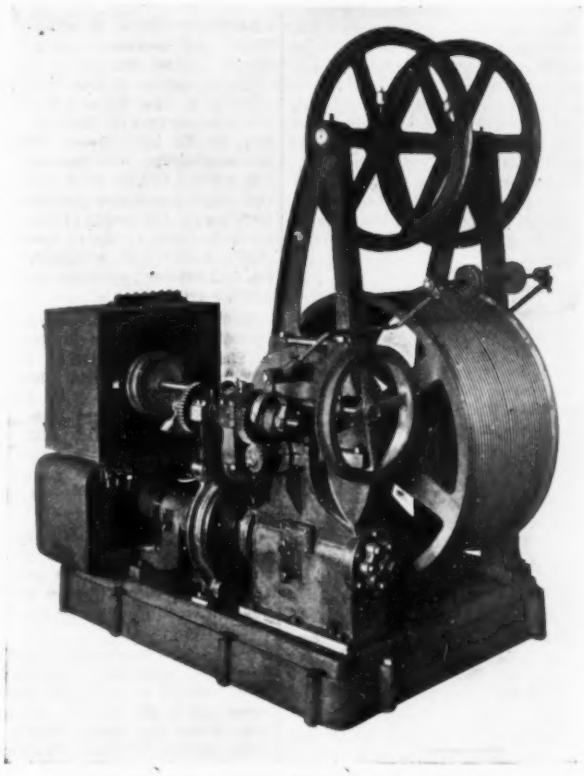
Tallest Sand-Lime Brick Building.

In view of the steady progress reported from all sections of the country in the use of sand-lime bricks for erecting buildings of all kinds, the accompanying illustration will be of interest. This shows the tallest building erected of sand-lime bricks. The structure is located at Watertown, N. Y., and the bricks were supplied by a company of that city whose plant was equipped with machinery by the Semisteel Co. of 701 New England Building, Cleveland, Ohio. The Semisteel Co. owns the Ohlemacher system for making building bricks from sand and lime, and its equipments are in steady and increasing use throughout the United States. Its machinery now in established plants is producing some 20,000,000 bricks annually, and many other plants are now being built to adopt its system. A number of the plants are in the Southern States. An illustrated booklet giving all the facts concerning the Ohlemacher system, its superiorities and numerous advantages, can be obtained from the Semisteel Co.'s Cleveland offices.

THE TALLEST SAND-LIME BRICK BUILDING.

Direct-Connected Electric Elevator.

An accompanying illustration represents a direct-connected electric elevator machine that has been sold for two decades. It has been the maker's claim that the machines have been tried and not found wanting. The machine is built by the Louisville Elevator Co., Louisville, Ky., which has installed them in almost every State in the Union.



DIRECT-CONNECTED ELECTRIC ELEVATOR.

The motors and controllers are designed and built in the Louisville Elevator Co.'s own factory especially for the hard usage to which elevators are subjected. In purchasing an elevator it is an advantage to buy from a manufacturer who builds these parts, if for no other reason than that such a company will carry a stock of repair parts to fill orders promptly in case of an emergency.

The braking device is so arranged that a stronger force is applied at the terminal landings than at intermediate floors. This is done automatically and is positive.

The slack-cable device is also automatic, cutting off the electric current and stopping the machinery as soon as the cables become slack from any cause.

These machines are built for capacities from 1000 to 15,000 pounds and for any practical speed.

The company has just completed installing 14 of these machines in Los Angeles, Cal., and a plant of 60 elevators (21 electric and 39 hydraulic) in the union depot at St. Louis.

Shippers of coal at Norfolk and Baltimore are among those who have been asked to bid on 25,000 tons of coal for the use of naval stations in the Philippine Islands.

A Query for Boiler Experts.

It will sometimes happen that an unusual condition will arise in a boiler so that those immediately connected with the plant are at a loss to explain why the condition exists and how it should be remedied. An instance of this is seen in the following letter received by the Manufacturers' Record. Joseph A. Turner of Hollins, Va., writes:

"About 10 days ago a swag or pocket about 28 inches long and 52 inches wide and two and one-half inches deep appeared in a 100-horse-power boiler. The boiler had been washed five days before, and to all appearance was in perfect condition. A boiler inspector was immediately sent for, and as soon as the boiler cooled sufficiently he made an interior and exterior examination. He found in the boiler not over a handful of scale and dirt. The boiler was of standard make, had been in use only about four months, had been washed and cleaned regularly, and had been pronounced in first-class condition by inspector who made inspection during the first part of August. The only explanation that has been suggested is that the bridge wall was too close to the bottom of the boiler. The bridge wall, however, was put in in strict accordance with the plans and specifications furnished by the insurance company and approved by the makers of the boiler."

Boiler experts are invited to write Mr. Turner regarding the swag or pocket mentioned.

Foundry and Machine Shop Needed.

There is an opportunity at Tupelo, Miss., for the establishment of a small foundry and machine shop, the industry being needed. A good business man who can invest from $10,000 to $15,000 could probably obtain an interest in a manufacturing plant allied to the machine business as a nucleus for the needed plant. Tupelo is growing rapidly, and its advantages are many. A fine agricultural region is around it. For information address George L. Snowden.

Want Agencies in Panama.

Messrs. Hermogenes Guerrero & Co., Colon, Panama, write the Manufacturers' Record that they are desirous of representing American firms in their country.

Construction Department

TO OUR READERS!

In order to understand and follow up properly the Construction Department items, please bear in mind the following statements:

EXPLANATORY.

The MANUFACTURERS' RECORD seeks to verify every item reported in its Construction Department by a full investigation and complete correspondence with everyone interested. But it is often impossible to do this before the item must be printed, or else lose its value as news. In such cases the statements are always made as "rumored" or "reported," and not as positive items of news. If our readers will note these points they will see the necessity of the discrimination, and they will avoid accepting as a certainty matters that we explicitly state are "reports" or "rumors" only. We are always glad to have our attention called to any errors that may occur.

* Means machinery, proposals or supplies are wanted, particulars of which will be found under head of "Machinery, Proposals and Supplies Wanted."

In correspondence relating to matters reported in this paper, it will be of advantage to all concerned if it is stated that the information was gained from the MANUFACTURERS' RECORD.

ADDRESS FULLY.

To insure prompt delivery of communications about items reported in these columns, the name of one or more incorporators of a newly incorporated enterprise should be shown on the letter addressed to that town, or to the town of the individual sought, as may be shown in the item, as sometimes a communication merely addressed in the corporate or official name of a newly established company or enterprise cannot be delivered by the postmaster. This will help to insure prompt delivery of your communication, although it is inevitable that some failures on the part of the postal authorities to deliver mail to new concerns will occur.

WRITE DIRECTLY.

It is suggested to advertisers and readers that in communicating with individuals and firms reported in these columns, a letter written specifically about the matter reported is likely to receive quicker and better attention than a mere circular.

BALTIMORE BUILDING NOTES.

Business Buildings.

Baltimore — Warehouses. — Additional bidders have been selected to estimate on the construction of nine warehouses to be located at northeast corner Hanover and Lombard streets for James Ingram, Sr., Light street and Ohio avenue, after plans and specifications by Ellicott & Emmart, architects, 323 North Charles street. They are the Flynt Building & Construction Co., Tatterson & Thuman, 214 North Liberty street; Wells Bros. Company, 344 North Charles street, and Charles McCaul Company, 123 West Saratoga street. Those reported in this column October 26 are J. H. Miller, 110 Dover street; Edward D. Preston, 140 West Fayette street; Henry Smith & Sons Company, 116 South Regester street; James Stewart & Co., 319 North Charles street; William Steele & Sons, 17 West Saratoga street; Cramp & Co., 407 St. Paul street; Henderson & Co., Ltd., 218 West Fayette street; John Hiltz & Son, 3 Clay street; John Cowan, 106 West Madison street, and Charles Gilpin, 21 East Saratoga street; bids to be in November 4. Full details concerning these buildings recently reported.

Baltimore—Store Building.—Carl G. Hilgenberg, president Carr-Lowrey Glass Co., Westport, Baltimore county, Md., has commissioned Tormey & Leach, architects, 325 St. Paul street, to prepare plans and specifications for store building to be located at 203 and 205 North Eutaw street. Structure to be six stories high with basement, 41.1x69.6 feet; brown brick with ornamental Indiana limestone trimmings; concrete foundation; reinforced concrete floors, columns, roof, side and rear walls; fireproof throughout; slag roofing; metal doors throughout building; metal frames and sashes glazed with wireglass; ornamental wrought-iron cornice; electric wiring and fixtures; sanitary plumbing; steam-heating system; electric passenger and freight elevators.

Baltimore—Warehouses.—George N. Mackenzie, 331 St. Paul street; Hoffman Allan and John S. Bridges, 28 South Charles street, have awarded contract to C. S. M. Williamson, builder, 18 East Lexington street, for the construction of three warehouses to be located at 22, 24 and 26 South Charles street after plans and specifications by George N. Mackenzie, 3d, and Wyatt & Nolting, associated architects, Builders' Exchange Building, 2 East Lexington street. Structures to be four stories high with basements, 66.1x60.4 feet; brick with granite base and Indiana limestone trimmings; concrete foundations; steel beams; slag roofing; galvanized-iron cornices and skylights; metal frames and sashes glazed with wireglass; vault lights; metal ceilings; electric wiring and fixtures; sanitary plumbing; steam-heating systems; two hand elevators; one dumbwaiter. These buildings previously mentioned.

Baltimore — Store Building. — Mrs. E. V. Shorb has awarded contract to Samuel Spreat, builder, 203 North Pine street, for the construction of store building to be located at 17 East Fayette street after plans and specifications by Henry J. Tinley, architect, 421 St. Paul street. Structure to be four stories high with basement, 25x111 feet; iron-spotted Roman brick with granite base and copper trimmings; concrete foundations; steel beams; tin roofing; terra-cotta cornice; galvanized-iron skylight; metal frames and sashes glazed with wireglass; electric wiring and fixtures; sanitary plumbing; steam-heating system.

Baltimore—Lodging-house.—L. Lipsitz, 653 Columbia avenue, has commissioned Henry J. Tinley, architect, 421 St. Paul street, to prepare plans and specifications for lodging-house to be located at 22 Centre Market Space. Structure to be three stories high, 25x65 feet; Roman brick with granite base and stone trimmings; concrete foundation; steel beams; slag roofing; galvanized-iron cornice; granolithic pavement; gas fixtures; sanitary plumbing.

Baltimore—Dwellings.—George C. Thomas, Fidelity Building, Charles and Lexington streets, has purchased the property located at southwest corner Charles and 27th streets and will erect dwellings on the site, which is 150x100 feet.

Baltimore — Warehouse. — Further details have been obtained concerning warehouses to be erected at 13 and 15 West Baltimore street and 8, 10, 12, 14, 16 and 18 West German street for Henry White, Baldwin & Frick, agents, 224 North Charles street; the Thomsen estate, Hinkley & Morris, attorneys, 215 North Charles street, and the Taylor estate, Robert A. Taylor, trustee, 8 Builders' Exchange Building, 2 East Lexington street, after plans and specifications by Wyatt & Nolting, architects, Builders' Exchange Building, 2 East Lexington street. Structure to be six stories high with basement, 40.1 feet on Baltimore street, 118 feet on German street and 204 feet deep; brick with granite base and ornamental terra-cotta trimmings; concrete foundation; mill construction; cast-iron columns; slag roofing; vault lights; marquise glazed with wireglass; metal frames and sashes glazed with wireglass; galvanized-iron skylights; prismatic glass; electric wiring and fixtures; sanitary plumbing; steam-heating system. Alternate bid on terra-cotta or concrete fireproofing. Elevators and pavements not included in contracts. Charles Gilpin, 21 East Saratoga street; Henderson & Co., Ltd., 218 West Fayette street; William Steele & Sons, 17 West Saratoga street; Wells Bros. Company, 344 North Charles street; A. J. Robinson Company, 30 West Franklin street; Morrow Bros., 212 Clay street; F. B. Gilbreth, 211 North Liberty street; John Hiltz & Son, 3 Clay street; John Cowan, 106 West Madison street; James Stewart & Co., 319 North Charles street, and Cramp & Co., 407 St. Paul street, have been selected to estimate on the construction; bids to be in November 7.

Baltimore—Store Building.—Further details have been obtained concerning store building for the Johns Hopkins University trust estate, R. Brent Keyser, president, 14 East Mount Vernon Place, to be erected at 113 North Charles street after plans and specifications by Ellicott & Emmart, architects, 323 North Charles street. Structure to be four stories high with basement, 22x57 feet; brick with granite base and ornamental terra-cotta trimmings; concrete foundation; steel beams; cast-iron columns; slag roofing; metal frames and sashes glazed with wireglass; electric wiring and fixtures; sanitary plumbing. Heating system not included in contract. James Stewart & Co., 319 North Charles street; John Cowan, 106 West Madison street; William Ferguson & Bro., 214 Clay street; J. H. Miller, 110 Dover street; Morrow Bros., 212 Clay street, and Burnham & Wells, Builders' Exchange Building, 2 East Lexington street, have been selected to estimate on the construction; bids to be in November 3.

Baltimore—Residence.—Dr. J. Hall Pleasants, 110 North Charles street, has awarded contract to Brady & Watters, builders, 532 St. Paul street, for the construction of residence to be located at 16, 18 and 20 West Chase street after plans and specifications by Wyatt & Nolting, architects, Builders' Exchange Building, 2 East Lexington street. Structure to be four stories high with basement, 41x64.1 feet; brick with granite base and ornamental terra-cotta and Indiana limestone trimmings; concrete foundation; steel beams; slate and slag roofing; galvanized-iron skylight; hand elevator; dumbwaiter. Heating, plumbing, electric work, lighting fixtures, grading, papering, standing finish in parlor, library and dining-room not included in contract. This building previously mentioned.

Baltimore—Warehouse.—J. D. Groves & Co., oyster and fruit packers, 25 East Conway street, has awarded contract to Henry S. Rippel, builder, 7 Clay street, for the construction of warehouse to be located at 117 South Calvert street after plans and specifications by Herbert G. Crisp, architect, Builders' Exchange Building, 2 East Lexington street. Structure to be four stories high, 30x30 feet; brick with granite base and ornamental terra-cotta trimmings; concrete foundation; steel beams; cast-iron columns; slag roofing; galvanized-iron cornice and skylight; granolithic pavement; electric wiring and fixtures; sanitary plumbing; steam-heating system; power elevator. Elevator, electric wiring and heating apparatus not included in contract. This building previously mentioned.

Baltimore — Warehouses. — A. J. Robinson Company, 30 West Franklin street, and Murphy Construction Co., 202 West Fayette street, have been added to the list of those selected to estimate on the construction of the nine warehouses for James E. Ingram, Sr., to be erected on northeast corner Hanover and Lombard streets, after plans and specifications by Ellicott & Emmart, architects, 323 North Charles street, and full details concerning which have been reported in this column; bids to be in November 4.

Baltimore — Warehouse.—Clinton Summers of the Summers Printing Co., 17 South Howard street, will erect warehouse to be located at southeast corner Eutaw and Lombard streets. Structure to be four stories high with basement, 33x60 feet; brick with stone trimmings; concrete foundation; steel beams; tin or slag roofing; electric wiring and fixtures; sanitary plumbing; steam-heating system; power elevator.

Baltimore — Store Building. — The Singer Manufacturing Co., manufacturer of sewing machines, 19 West Franklin street, has purchased the property located at 109 and 111 West Lexington street, and it is the intention of the company to erect on the site, which is 40x75 feet, a five-story store building. Work on the building will not commence until about February 1, when the company will obtain possession of the property.

Baltimore—Apartment-house.—Isidor Noah, 2108 Callow avenue, has purchased the property located at 2128 and 2130 Madison avenue and intends to erect on the site, which is 36.9x120 feet, an apartment-house six stories high.

Baltimore — Store Building. — Charles J. Bonaparte, 216 St. Paul street, has awarded contract to Charles L. Stockhausen, builder, 414 East Fayette street, for the construction of store building to be located at 215 East Baltimore street, after plans and specifications by Hoyt & Mackintosh, architects, 11 East Pleasant street. Structure to be three stories high with basement, 18.6x104 feet; white terra-cotta front with granite base; concrete foundation; steel beams; slag roofing; metal frames and sashes glazed with wireglass; two galvanized-iron skylights; electric wiring and fixtures; sanitary plumbing; steam-heating system; dumbwaiter. This building will be occupied by Joseph Crane, shoe dealer, 113 North Liberty street. This building previously mentioned.

Baltimore—Office Building.—The Law Construction Co., Wm. G. Speed, 114 South Eutaw street, has engaged R. H. Frazier & Sons, builders, 220 St. Paul street, to superintend the construction of office building to be erected on Courtland street, near Lexington street, after plans and specifications by Chas. E. Cassell & Son, architects, 411 North Charles street. Structure to be 10 stories high with basement, 65.6x100 feet; iron-spotted brick with ornamental terra-cotta trimmings; concrete foundation; steel-frame fireproof construction; slag roofing; galvanized-iron cornice and skylights; electric wiring and fixtures; sanitary plumbing; steam-heating system; four electric elevators. This building previously mentioned.

Baltimore—Dwellings.—August Weber, 1701 St. Paul street, has purchased four tracts of land bounded by Madison and Monument streets and Milton, Montford and Ashland avenues. Each of the tracts are 320x330 feet. He has awarded contract to Frank Novak, builder, Madison street and Patterson Park avenue, for the construction of 276 dwellings to be located on the site. Structures to be two and three stories high; pressed brick with stone trimmings; tin roofing; galvanized-iron cornices; gas fixtures; sanitary plumbing; furnace-heating systems; cost to be about $325,000.

Baltimore — Office Building. — Hyland P. Stewart, Builders' Exchange Building, 2 East Lexington street, as agent, will award contract to George Bunnecke & Sons, builders, 305 St. Paul street, for the construction of office building to be located at northwest corner German street and Wine alley, after plans and specifications by Haskell & Barnes, architects, Central Savings Bank Building, 3 East Lexington street. Structure to be six stories high with basement, 28.6x54.6 feet; gray brick with granite base and marble and galvanized-iron trimmings; concrete foundation; steel beams; cast-iron columns; tin roofing; galvanized-iron cornice; cast-iron stairway; vault lights; fire-escape; reinforced concrete on first floor; galvanized-iron skylight; steel ceilings; electric wiring and fixtures; sanitary plumbing. Heating system and electric elevator not included in contract. This building previously mentioned.

Manufacturing Buildings and Other Enterprises.

Baltimore — Real Estate. — The Alliance Realty Co. has been incorporated with an authorized capital stock of $10,000 for dealing in real estate by Thornton Rollins, Hopkins Place and Lombard street; N. Rufus Gill, 215 St. Paul street; Frederick C. Seeman, 110 Hopkins Place; G. Harry McGahan, 110 Hopkins Place, and A. D. Seeman, 110 Hopkins Place.

Baltimore — Moldings and Picture-frame Factory.—Furst Bros. & Co., manufacturers of moldings, mirrors and picture frames, 213 West Camden street, have had plans and specifications prepared for factory building to be located at northeast corner Stockholm street and Creek alley. Structure to be four stories high, 61.11x128.10 feet; brick with bluestone trimmings; concrete foundations; steel beams; tin roofing; galvanized-iron cornice; fire shutters; fire-escape; sprinkler system; belt-driven elevator. James Stewart & Co., builders, 319 North Charles street, are submitting an estimate on the construction; bid to be in October 28.

Baltimore — Construction Engineers. — The Construction Engineers' Co. has been incorporated, with an authorized capital stock of $5000, for conducting a mechanical and civil-engineering business and to engage in general contracting and construction work, by John Phillips, Daniel Cloud, Jr., 18 West Saratoga street, and J. Hurt Pierre.

Baltimore—Fertilizer Plant.—It is reported that Swift & Co., Chicago, Ill., contemplate the establishment in this city of a large plant for the manufacture of fertilizer, and have had a representative looking for a suitable location of such a plant.

Baltimore — Paper Mill. — The Southern paper mill recently reported in this column as locating a branch of its establishment in this city is the Paper Mills Co. of Atlanta, Ga. The plant is to be located at northeast corner of Lombard and Frederick streets, and plans and specifications are now being made for the building by Archer & Allen, architects, Central Savings Bank Building, 3 East Lexington street. The Johns Hopkins Hospital trust estate, 211 North Charles street, are the owners of the building.

Baltimore—Electric-light and Power Plant. The Baltimore Electric Power Co., offices with the Maryland Telephone & Telegraph Co., Maryland Telephone Building, Lexington and Courtland streets, has awarded contract to John Waters, builder, 23 East Center street, for the construction of its electric-

light and power plant to be located at Webster, McComas and Donaldson streets. The cost of the building, exclusive of the necessary machinery, will be about $100,000. This building previously mentioned.

Subbids Wanted.

Mention of contractors wanting subbids on construction work and material will be found, when published, in the "Machinery Wanted" column on another page under the heading of "Building Equipment and Supplies."

ALABAMA.

Bessemer—Planing Mill and Woodworking Plant.—Crotwell Bros. have purchased site on which to erect planing mill and woodworking factory.

Birmingham—Laundry.—White Swan Laundry Co. will increase capital from $4000 to $8000.

Birmingham—Grocery Company.—Incorporated: Mackin Grocery Co., with $5000 capital, by James Mackin and others.

Birmingham—Mining and Manufacturing.—Sayre Mining & Manufacturing Co., previously reported as having increased capital to $150,000, has further increased it to $200,000.

Bridgeport—Stave Mill.—Bridgeport Stave Co., previously reported incorporated under Chattanooga, Tenn., with $5000 capital, is erecting main building 40x150 feet, boiler and engine room and two-dry-kilns; plant will have an annual capacity of 2,000,000 light barrel staves. (See item under Chattanooga, Tenn.)

Flomaton—Hardwood and Veneering Plant. It is reported that the hardwood and veneering plant of A. J., Ed. and Charley Jackson will be removed from Century, Fla., to Flomaton.

Gadsden—Steel-rod Mill.—Various reports are current regarding additional plants to be built next year by the Alabama Steel & Wire Co., offices at Gadsden and Birmingham. The exact facts are that the company will begin next spring the construction of a steel-rod mill only. Additional furnaces, etc., will be considered in the future as the company's original plans are carried out and the demand for the product increases. E. T. Schuler is president of the company; offices at Gadsden.

Mobile—Ice and Cold-storage Plant.—It is reported that Weinacker Bros. will erect ice and cold-storage plant.

Mobile—Saw-mill.—Reports state that the Mobile Lumber Co. will rebuild hardwood saw-mill, reported burned last week. Scott J. Daugherty is president.

Mobile—Wharf, Sheds, etc.—International Mahogany Co. of Mobile and Cincinnati, Ohio, will make extensive improvements to its plant in Mobile, including the erection of wharf 300x350 feet, capable of holding about 5,000,000 feet of timber and costing $40,000; drying sheds, etc. Louis W. Moragues is general manager.

ARKANSAS.

Little Rock—Roller Cotton-gin Factory.—It is reported that the American Roller Gin Co. of Boston, Mass., contemplates establishing factory for the manufacture of a roller cotton gin.

Mammoth Springs—Canning Factory.—Reports state that the Memphis Canning Co. of Jeffersonville, Ind., is investigating site for canning factory.

Texarkana—Canning Factory.—It is reported that a canning factory will be established, and E. W. Thomas of Mandeville, Ark., is promoting the enterprise.

FLORIDA.

Bartow—Ice Factory.—E. W. Codington will rebuild ice factory reported burned last week at a loss of $8000. Contracts have been let.

Boyd (P. O. Cotton Plant)—Turpentine Still.—Malloy Bros. will establish turpentine still.

Eustis—Kaolin Mines.—It is reported that the Lake Region Mining Co. will develop kaolin mines near Eustis, and C. D. Gifford can give information.

Fort Pierce—Ice and Electric-light Plant.—Reports state that A. R. Blanjon, C. C. Chillingsworth and Joseph Jefferson will organize company to establish electric-light and ice plant.

Jacksonville—Fertilizer Works.—E. O. Painter Fertilizer Co. has let contract to W. T. Cotton for rebuilding that portion of works recently burned.*

Jacksonville—Wharf.—Atlantic Coast Line Railroad Co. has let contract to William T. Cotter of Jacksonville, Fla., for the building of saw-tooth wharf 2180 feet long in connection with its proposed export terminal at Jacksonville.

Jacksonville—Lumber Company.—Strickland Lumber Co. has incorporated, with $100,000 capital. Colquitt Strickland of Valdosta, Ga., is president and treasurer; Frank Roberts of Valdosta, Ga., vice-president, and W. J. Kelly of Savannah, Ga., secretary.

Miami—Mattress Factory.—Edwin Nelson is erecting building which will be equipped as mattress factory.

Miami—Mercantile.—Incorporated: McCrimmon Company, with $30,000 capital, by C. McCrimmon, J. E. Lummus and others.

Miami—Fruit Company.—Consolidated Fruit Co. has been incorporated with $100,000 capital. Wm. Brown is president; W. W. Blackburn, vice-president; T. V. Moore, secretary, and G. L. Browning, treasurer.

Palatka—Sewerage System.—William W. Lyon, C. E., Memphis, Tenn., has been engaged by the city to prepare plans for proposed sanitary and storm-water sewers to be constructed at a cost of $100,000.

Perry—Turpentine Still.—Reports state that J. F. Fender of Valdosta, Ga., will establish turpentine still near Perry.

Perry—Mercantile.—Incorporated: Powell-McLean Company, with $250,000 capital. Company will also operate turpentine plants at Hampton Springs and Boyd.

Tampa—Cigar Factory.—Havana Clearo Cigar Co. has been incorporated with $7500 capital to establish cigar factory. Wilbur E. Yocum is president, and Edwin R. Dickerson, secretary-treasurer.

Winter Park—Electric Plant.—Winter Park Electric & Fuel Co. has been incorporated with $25,000 capital by J. M. Cheney, H. H. Yowell and H. W. Greetham to erect and operate an electric plant.

GEORGIA.

Abbeville—Mercantile.—Abbeville Trading Co. has been organized, with $15,000 capital, by R. S. Beall of Richmond, Ga., and others.

Acworth—Cotton Mill.—It is proposed to organize the Acworth Cotton Manufacturing Co., with capital stock of $100,000, for the purpose of building a cotton mill. Temporary officers are: President, Orlando Awtrey; J. L. Lemon, vice-president, and J. J. Northcutt, secretary.

Americus—Water-works Improvements.—It is reported that improvements will be made to water-works, including the construction of 500,000-gallon storage tank and installation of air compressor. Address The Mayor.

Atlanta—Real Estate.—Chartered: Eady-Hardin Investment Co., with $50,000 capital, and privilege of increasing to $200,000; incorporators, Thomas J. Eady, Edwin A. Hardin and W. D. Thomas.

Atlanta—Soap Factory.—Imperial Soap Co. has been organized to manufacture the dye soap to be used in washing and dyeing goods at the same time. Company is arranging for the erection of factory building.

Columbus—Foundry and Machine Shop.—Golden's Foundry & Machine Co. will erect building at a cost of about $15,000 and install machinery for increasing capacity.

Elberton—Cotton Mill.—Swift's Cotton Mill will install finishing machinery in the additional building reported last week.

Fort Valley—Townsite.—Southland Town & Land Co. has been organized with W. Peddicord, president, and Rev. George B. Culpepper, secretary-treasurer, to open a new town in Georgia.

Garden Valley—Saw-mill.—Ricks Bros. will rebuild saw-mill reported burned last week.*

Newnan—Electric-light Plant.—City has voted affirmatively the bond issue previously reported for the purchase of the Newnan Light & Power Co.'s plant. Address The Mayor.

Savannah—Excelsior Factory.—It is reported that the West Savannah Excelsior Manufacturing Co. will at once rebuild plant recently burned at a loss of $8000.

Tennille—Water-works and Electric-light Plant.—City has voted affirmatively the bond issue previously reported for improving water-works and purchasing electric-light plant. Address The Mayor.

Valdosta—Drug Factory.—H. J. Sardlin, J. M. Harvey, N. M. Armfield and J. H. Stump have incorporated the Sulphone Chemical Co., with $5000 capital and privilege of increasing to $50,000, for the manufacture of "Sulphone."

KENTUCKY.

Ashland—Brick Works.—Ashland Fire-Brick Co. will rebuild plant recently burned at a loss of $10,000; structure will be one story, 100x110 feet; electrical equipment will be installed.*

Ely (P. O. Flatlick)—Coal Mining.—John G. Matthews, president First National Bank, Barbourville, Ky., will develop 400 acres of coal land near Ely having a daily output of 400 tons, and John Howard is engineer in charge. About $25,000 will be invested. This project was referred to last month.

Frankfort—Coal Mining.—John G. Morton, Wm. L. Gordon and M. K. Gordon, all of Madisonville, Ky., have incorporated the Morton & Gordon Company to operate coal mines, etc.

Lexington—Drying-house.—Burley Lookse Tobacco Warehouse Co. will erect drying-house.

Lexington—Oil Refinery and Paint Factory. It is reported that the Indian Asphalt Co. of Chicago, Ill., contemplates establishing oil refinery and paint factory. About $300,000 will be invested.

Lexington—Tobacco Factory.—Blue Grass Tobacco Co. has increased capital from $50,000 to $100,000. It has been manufacturing smoking tobacco only, but is also installing machinery for the manufacture of chewing tobacco. Plant will have a yearly output of 1,000,000 pounds of tobacco.

Louisville—Supply Company.—Dr. John Higgins, Arthur Bensinger and Robert Higgins have incorporated the Physicians' Supply Co. with $30,000 capital.

Louisville—Chemical Works.—Ineeda Copho Co. has been incorporated with $100,000 capital by Harry B. De Ford, William C. Hoefflin, Herman F. Lochner, David J. Etly, Jas. Mitchell and associates to manufacture chemicals.

Louisville—Mining and Development Company.—Incorporated: Kentucky Mining & Development Co., with $1000 capital, by R. L. O'Brien, Frank C. Dickson, Charles Elsom, P. R. Murphy, Charles A. Giller and J. F. Elsom.

Louisville—Printing Plant.—C. T. Dearing Printing Co. has been incorporated, with $21,000 capital, by C. T. Dearing, Warwick Miller, W. J. Day and T. B. Harrison, Jr.

Louisville—Sewerage, Street Improvements and Drainage.—City will vote November 8 on the issuance of $3,500,000 of bonds for the construction of sewers, reconstruction of streets and the improvement of Beargrass creek for drainage purposes. Charles F. Grainger is mayor.

Louisville—Piano Factory.—It is reported that Cyrus L. Adler, president of the Adler Organ Co., contemplates establishing $100,000 piano factory.

Paducah—Handle Factory.—Reports state that the Given-Brake Handle Works contemplates erecting building and installing additional machinery for increasing output. Capital will also be increased.

LOUISIANA.

Covington—Cannery.—Reports state that A. F. Helwick contemplates establishing cannery.

New Orleans—Shoe Company.—Hellman Shoe Co., Ltd., has been incorporated with $25,000 capital. Max B. Hellman is president and treasurer; Jacob Weinberger, vice-president, and Charles Weinberger, secretary.

New Orleans—Mercantile.—New York Commission Co., Ltd., has been incorporated with $50,000 capital by Max Abraham and others.

Newroads—Water-works.—City has voted the proposed $14,000 bond issue for the construction of system of water-works. Address The Mayor.

MARYLAND.

Frostburg—Factory Building.—Allegany Terrace Building & Supply Co., reported incorporated last week with $5000 capital, is having plans prepared by Joseph Spiker for the erection of proposed buildings to cover a space of 150x200 feet.*

Gaithersburg—Flour Mill.—Gaithersburg Milling & Manufacturing Co. will erect $30,000 flour mill to replace structure burned.

Oxford—Water-works.—Town will vote November 8 on the issuance of $20,000 of bonds for improving water supply. Address Town Clerk.

Solomons—Flour Mill.—The Calvert Milling & Manufacturing Co. has been incorporated with an authorized capital of $50,000, and Frank O. Smith, Charles and Conway streets, Baltimore, Md., is president; Thomas Parran, Annapolis, Md., vice-president, and Dr. Wm. H. Marsh of Solomons, secretary. Company has purchased the mill of Frank O. Smith at Dunkirk, which will be removed to Solomons, and will also erect an elevator of 15,000 bushels capacity. Address the secretary.*

MISSISSIPPI.

Gloster—Cotton Gin.—Gloster Oil Co. will erect cotton gin at a cost of $8000 to replace one reported burned last week. Machinery has been purchased.

Greenville—Brick Works.—Greenville Brick Co. has purchased site on which to locate brick plant.

Magnolia—Water-works.—A. B. Sanders, Shreveport, La., has contract for the construction of water-works previously reported. Bids are being invited for drilling well. Xavier A. Kramer & Co. are engineers in charge.*

Pascagoula—Cannery.—Reports state that Thomas J. Clark and associates of New Orleans, La., have purchased and will operate the plant of the Delmas Canning Factory. The factory will be enlarged to the capacity of 15,000 barrels.

MISSOURI.

Carthage—Grain-door Company.—S. F. Wheeler, Alex. Hill, Ed Gartland and others have incorporated the Carthage Grain Door Co. with $50,000 capital.

Carthage—Mining.—First National Mining Co. has been incorporated with $40,000 capital by J. W. Ground, T. K. Irwin, E. L. Bucher and others.

Chillicothe—Corn Mill and Elevator.—T. E. Jackson and W. E. Gundy, operating as Jackson & Gundy, are building corn mill and elevator; mill building to be two stories of frame, 76x24 feet, and will be equipped with machinery with a daily capacity of 20,000 pounds of cornmeal and 40,000 pounds of corn-chop; elevator will have a capacity of 6000 bushels. Machinery has been ordered.

Joplin—Prospecting Company.—Conservative Prospecting Co. has been incorporated with $100,000 capital by A. Corbin, J. W. McIntire and Haywood Scott.

Joplin—Mining.—Incorporated: Gundling & Tobias Mining Co., with $50,000 capital, by Elias Tobias, H. Gundling and A. Gundling.

Salisbury—Water-works.—City has voted affirmatively the proposed $20,000 bond issue for the construction of water-works; T. A. LaGrass, mayor.*

Springfield—Shoe Company.—Robert Wagstaff, Percy Wagstaff and Arthur M. Wagstaff have incorporated the Guarantee Shoe Co., with $10,000 capital.

Springfield—Laundry, etc.—George H. McCann, George J. McCann, A. D. Schmook and others have incorporated the New Phoenix Laundry & Industry Co. with $10,000 capital.

St. Joseph—Woodenware Works.—Incorporated: Waverly Woodenware Works, with $25,000 capital, by F. J. Mass, W. P. Flint, W. H. Faust and others.

St. Louis—Glass and Chinaware.—Graves China Co. has incorporated, with $25,000 capital, to manufacture and deal in china, glass, etc.; incorporators, George E. Williams, M. K. Graves and W. E. Graves.

St. Louis—Realty Company.—Composite Realty Co. has been incorporated by Joseph M. Hays, Frank A. Ruf, W. J. Kinsella and associates, with $150,000 capital.

St. Louis—Automobile Company.—Incorporated: St. Louis Automobile Service Co., with $2000 capital, by H. W. Beardsley, C. E. Hains and others.

St. Louis—Realty Company.—Laisade Realty Co. has been incorporated, with $20,000 capital, by Lee A. Hall, Felix O. Paston and Robert W. Moore.

St. Louis—Electrical Works.—Charles R. Skinker, Merritt M. Beck, Clarence B. Beck of St. Louis, Joel C. Slaughter of Dallas, Texas; Horace W. Beck, Charles N. Coen and William S. Walker of Webster Groves, Mo., have incorporated the Electric Auto-Transfer Co., to conduct a general electrical equipment, construction and repair business; capital $25,000.

St. Louis—Paint Factory.—Gorman Paint Co. has been incorporated by T. W. Garland, William Gorman and Turner G. Wing, with $6000 capital, to manufacture and deal in paints, oils, etc.

St. Louis—Window-saving Device.—Life Saving Window Co. has incorporated, with $25,000 capital, to sell and install window-saving devices; incorporators, Theodore C. Ziegler, Theron E. Catlin, Earle Layman of St. Louis, C. H. Platt and George B. Leighton of New York, N. Y.

St. Louis—Brick and Tile Works.—Incorporated: Gillett Brick & Tile Co., with $12,000 capital, by John A. Laird, Richard H. Hyams, Isabel W. Laird of St. Louis, Amos A. Mackey and Arthur Gillett of Woodhull, Ill., to manufacture brick, tile and terra-cotta.

St. Louis—Sign-manufacturing.—Charles E. Thurman, J. H. Kelly and C. B. Rhodes have incorporated the St. Louis Sign Manufacturing Co. with $5000 capital.

St. Louis—Construction Company.—E. A. Steininger Construction Co., with $10,000 capital, by E. A. Steininger, H. F. Steininger and G. W. Steininger.

St. Louis—Contracting, etc.—Clarence De Voy, J. J. Maher, W. G. Hawley and Charles Powers have incorporated the Mound City Gravel Material & Contracting Co., with

$320,000 capital, to manufacture and deal in building materials, construct railroads, etc.

St. Louis—Machine Shop.—Johnson-Robinson Machinery Co. has been incorporated by M. Wilbur Johnson, Henry K. Robinson, L. M. Robinson of St. Louis, Mo., and David L. Johnson of Hubbardston, Mass., with $15,000 capital, to manufacture and deal in machinery, tools and implements.

St. Louis—Gold Mining.—Lavic Mining Co. has been incorporated with $20,000 capital by Edward Devoy, George H. Morrill, J. L. Dryden and others to mine gold and erect a cyanide process mill with a daily capacity of 50 tons. Ed R. Fenerborn, 986 Carondelet street, Los Angeles, Cal., is engineer in charge. Company can be addressed at 603 Fullerton Building, St. Louis.

St. Louis—Hardware-specialty Factory.—Pierce Hardware Specialty Co. has been organized with $100,000 capital by Jesse W. Pierce of Belton, Texas, and others to manufacture hardware specialties which Mr. Pierce has invented.

Troy—Electric-light Plant.—City has voted affirmatively the proposed $10,000 bond issue for the establishment of electric-light plant. Address The Mayor.

Webb City—Mining.—Lucky Abe Mining Co. has been incorporated by Will H. Smith, Mary C. Smith, A. L. Shepard and others; capital $10,000.

NORTH CAROLINA.

Burlington—Structural-steel Works, etc.—Virginia Bridge & Iron Co. of Roanoke, Va., has purchased at $200,000 the plant of the Carolina Steel Bridge & Construction Co., manufacturing bridges, structural steel for buildings, fireproof warehouses, etc., which will be operated in connection with the company's plant at Roanoke.

Charlotte—Mattress Factory.—W. C. Thomas & Co. have secured building at the corner of 7th street and Railroad, and will install machinery for manufacturing felt mattresses.

Charlotte—Mercantile.—Chartered: G. W. Painter Co., with $10,000 capital, by G. W. Painter and others.

Cornelius—Knitting Mill.—Mr. Stough is organizing company to build a knitting mill for hosiery. Proposed capital is $25,000.

Dover—Lath and Shingle Mills.—Reports state that the West Lumber Co. contemplates establishing mill for the manufacture of laths and shingles.

Durham—Knitting Mill.—The Durham Hosiery Mills will establish mill No. 2. Building has been purchased and an equipment of machines will be installed for making the cheaper grades of cotton hosiery.

Elm City—Electric-light Plant.—Rock Ford Manufacturing Co. will install electric-light plant for lighting cotton gin, saw and planing mill and for furnishing lights to the city. Mayor G. R. Winstead is manager.

Hillsboro—Cotton Mill.—The Bellevue Manufacturing Co., lately reported incorporated with capital stock of $125,000, has organized with Shepperd Strudwick, president, and T. Norfleet Webb, general manager, and will build cotton factory.

Jacksonhill—Saw-mill.—Commercial Lumber Co. of Brief, N. C., will erect saw-mill.

Kenly—Saw-mill.—It is reported that the Dennis Simmons Lumber Co. of Elm City, N. C., contemplates building a two-band saw-mill.

McDonald—Mercantile.—J. S. Townsend, A. L. Hall and associates have incorporated the Iona Supply Co. with an authorized capital of $25,000.

Newbern—Lumber Plant.—Munger & Bennet are making improvements to planing mill and will also install band mill.

Newbern—Woodenware Factory.—It is reported that W. B. Ellis contemplates establishing plant for the manufacture of bread plates from paw-paw gum.

Old Trap—Mercantile.—Incorporated: Globe Mercantile Co., with $3000 capital, by A. B. Forbes and others.

Penelo—Cotton Gin, Saw-mill and Meal Mill.—Gen. W. R. Cox will rebuild cotton gin reported burned last week under Rocky Mount, N. C., at a loss of $10,000, and will also install saw-mill and meal mill.*

Pinetops—Mercantile.—Pine Top Supply Co., by W. J. Webb and others, with $50,000 capital.

Rocky Mount—Guano Factory.—Rocky Mount Guano Co. is the title of company reported organized last week with $25,000 capital by H. E. Brewer & Co. to establish 50-ton guano factory. Plant will be operated in connection with the Planters' Oil Mill.

Selma—Publishing.—Selma News Co. has been organized for the publication of weekly newspaper.

Terrell—Cotton Gin.—R. E. Gabriel, whose cotton gin was reported burned last week at a loss of $1500, will not rebuild until next year.*

Tryon—Water-works.—City will vote December 6 on the $20,000 bond issue, previously reported, for the construction of system of water-works. E. E. Missildine is mayor.

Wadesboro—Marble and Granite-finishing Company.—W. T. Barsington and others have incorporated the Wadesboro Marble & Granite Finishing Co., with $50,000 capital.

Wilmington—Stamp Works.—Wilmington Stamp Works has increased capital from $2500 to $5000.

Wilmington—Box and Barrel Factory.—Reports state that W. H. Roberson, vice-president, and L. A. Fox, manager, of the cooperage department of the Heinz Pickle Co., Pittsburg, Pa., are investigating site for the location of box and barrel factory. Company contemplates establishing plant having a daily output of four cars of boxes and a car of barrels.

SOUTH CAROLINA.

Aiken—Publishing.—Chartered: Journal Publishing Co., by J. F. Byrnes and A. K. Lorenz; capital $5000.

Anderson—Bottling Plant.—Blue Ridge Beverage & Extract Co. has increased capital from $10,000 to $25,000.

Charleston—Land Company.—Goose Creek Land Co. has been incorporated, with $150,000 capital, by P. H. Gadsden and W. C. Miller.

Greenville—Drug Company.—Westmoreland Drug Co. has been incorporated with $2000 capital.

Lexington—Telephone System.—Chartered: Lexington Telephone Co., with $1000 capital. J. E. Kaughman is president.

Marion—Mercantile.—S. M. McColclough and J. R. Eadon have incorporated the S. M. McColclough Company with $4500 capital.

McCormick—Water-power Development.—Twin City Power Co., 99-95 Wall street, New York, owns and will develop the water-power at Ring Jaw Shoals, and for which surveys were reported last week as being made.

North Augusta—Cotton Mill.—The Davis Cotton Mills will be organized to build the plant lately reported as proposed. An equipment of 25,000 spindles and 800 looms for manufacturing fine goods will be installed; capital stock will be $500,000.

Pacolet—Cotton Mill.—The Pacolet Manufacturing Co. will either install additional spindles and looms in present building or build another mill.

Rock Hill—Warehouse Company.—Farmers' Union Warehouse Co. has been incorporated with $5000 capital by W. B. Wilson, John H. Steele and F. L. Whitner.

Sumter—Amusement Company.—Incorporated: Sumter Merry-Go-Round Co., by H. S. B. Wells and H. T. Edens, with $4000 capital.

Sumter—Lumber Company.—R. T. Yates, F. M. Dunnington and J. W. Jackson have incorporated the Sumter Lumber Co. with $50,000 capital.

Sumter—Fertilizer Works.—Reports state that the Virginia-Carolina Chemical Co. of Richmond, Va., has purchased through R. I. Manning 86 acres of land near Sumter on which to erect fertilizer works.

Union—Water-power-Electrical Plant.—Broad River Light & Power Co. has been incorporated by J. L. David, J. H. Dingle, Walter G. Green, A. B. Kugler, J. Lamb Perry, D. Van Smith, F. K. Myers and associates, all of Charleston, S. C., for the development of water-power near Union and the establishment of electric plant to furnish light and power; capital $1,000,000.

Walhalla—Water-works and Electric-light Plant.—Oconee Water, Light & Power Co. has been incorporated with $5000 capital.

TENNESSEE.

Chattanooga—Lawn Mowers.—Reports state that the Elwood (Ind.) Lawn Mower Co. contemplates establishing branch plant.

Chattanooga—Stave Mill.—Bridgeport Stave Co., previously reported incorporated with $5000 capital, has located mill at Bridgeport, Ala., and contemplates locating branch plant at Chattanooga. (See item under Bridgeport, Ala.)

Chattanooga—Woodworking Plant.—Reports state that Eastern capitalists have purchased site at Arlington Heights on which to erect two-story brick building 100 feet long and equip with machinery for manufacturing coffee mills, kitchen cabinets, showcases, etc. About $50,000 will be invested. Names of interested parties will be announced later.

Chattanooga—Manufacturing Plant.—G. E. Edwards has contract to erect two-story building 50x125 feet for the Chattanooga Bottling Works, previously reported. About $10,000 will be invested. A. T. Boice prepared the plans.

Cookeville—Veneering Factory.—Reports state that Soper & Hulsa of Michigan have secured building, which will be equipped as veneering factory.

Decatur—Phosphate Company.—Decatur Phosphate Co. has been incorporated, with $50,000 capital, by Wm. Rich, R. E. Douglass, H. M. Mills and John A. Pitts.

Erwin—Bottling Works.—R. L. Brown contemplates establishing bottling works next season.*

Hill City—Improvement Company.—Hill City Improvement Co. will be incorporated, with $10,000 capital, to deal in real estate. S. G. Corney has been elected president; Chas. Fletcher, vice-president; George Haley, secretary, and Will Sherrell, treasurer.

Jackson—Manufacturing.—Patton-Black Manufacturing Co. has been incorporated, with $25,000 capital, by C. P. Black, T. A. Patton, J. W. Vanden, B. P. Cantrell and W. H. Biggs.

Knoxville—Water-works.—W. W. Cook & Son of Junction City, Kan., have contract at $698,175 for the construction of water-works previously reported.

Lafollette—Steel Plant.—It is reported that the Lafollette Coal & Iron Co. will build within the next year an open-hearth steel plant. H. M. Lafollette is president.

Lewisburg—Pencil Factory.—It is reported that the American Lead Pencil Co. will rebuild plant reported burned last week at a loss of $75,000; E. L. Aschheim, superintendent; office, People's Bank.

Memphis—Real Estate.—R. J. Black, W. F. Black, C. P. Black and others have incorporated the R. J. Black Company with $10,000 capital.

Memphis—Fireworks Factory.—United States Fireworks Co. of St. Louis, Mo., has purchased site near Aulon on which to erect building for the manufacture of fireworks. John H. Wankleman is president of the company, and F. M. Jackson, vice-president. Contract for the necessary buildings has been let.

Nashville—Vehicle Works.—Reports state that Walter Doss has purchased at $6100 the plant of the J. M. DeFord Carriage Manufacturing Co. in East Nashville, and company will be reorganized to operate it.

Nashville—Baking-powder Factory.—Continental Baking Powder Co. has been incorporated, with $500,000 capital, to manufacture baking powder, and will have a daily capacity of three carloads. William J. Cummins is president; E. C. Goshorn of Cincinnati, Ohio, vice-president, and George Cummins, general manager. Building and machinery have been secured.

Nashville—Packing-house.—Reports state that E. C. Goshorn of Cincinnati, Ohio, representing a syndicate of that city, has purchased the plant of the Nashville Packing-House, which will be extensively improved and equipped with new and additional machinery for operating as a packing-house, cold-storage plant and ice factory. It is also reported that John Hetterman, representing Louisville (Ky.) capitalists, will control the local stockyards, and that the two plants will ultimately be consolidated.

Niota—Milling Company.—J. F. Orr, R. F. Tipton, W. H. Williams, H. M. Wilson and Tom Sherman have incorporated the Niota Milling Co. with $10,000 capital.

Pomona Road—Stave Mill.—Crossville Lumber Co. of Crossville, Tenn., reported incorporated last week to build stave mill, has had plans prepared by W. H. Bedingfield for the erection of buildings 30x72 and 24x40 feet, to be equipped with machinery for cutting whiskey and oil-barrel staves, and having a daily capacity of 10,000. Company expects later to erect two more mills. H. M. Donnelly is engineer in charge, and C. C. Benefield, superintendent.*

Southside—Flour Mill.—Southside Milling Co. has been organized with $5000 capital to erect and operate flour mill, for which company was reported last week as being formed. C. M. Hunter is president; A. E. Hudgens, vice-president; Dr. J. A. Scott, secretary, and J. B. Trotter, treasurer. Contract for building and machinery will be let at once.

Whitlock—Clay Lands.—Sidney Moudle of St. Louis, Mo., has purchased and is developing clay deposits in Henry county, with W. C. Ray of Whitlock, Tenn., as general superintendent; daily capacity 500 tons.

TEXAS.

Abilene—Construction Company.—Chartered: San Saba Construction Co., with $1,000,000 capital, by Morris R. Locke, John M. Blackburn, Charles A. Thomson, Fred Cockrell, John W. Hampton of Abilene; Carl H. Jewell of Boston, Mass., and Ira Mowery of Morrison, N. J., to undertake contracts for railroad construction.

Athens—Live-stock Company.—Koon Kreek Kennels has been incorporated, with $5000 capital, by R. P. Wofford, John W. Murchison of Athens and O. S. Carlton of Dallas, Texas.

Beaumont—Lumber Company.—P. E. Parminter of Beaumont, Edgar Caruthers and W. A. Q. Miller of Hamshire, Texas, have incorporated the Interstate Lumber Co., with $50,000 capital.

Call—Mercantile.—Call Mercantile Co. has been incorporated, with $5000 capital, by A. A. McNeil and others.

Dallas—Live-stock.—Incorporated: Lomo Alto Farm, with $60,000 capital, by Henry Exall, Alfred H. Belo and Joseph M. Dickson.

Dallas—Building Materials and Woodenware Factory.—Incorporated: Conkling Mill & Elevator Co., with $60,000 capital, to manufacture building materials and woodenware; incorporators, A. A. Watson, F. W. Boyle, W. H. Conkling, W. C. Pardue and others.

Dallas—Saddlery and Collar Factory.—G. H. Schoellkopf Saddlery Co., previously reported to erect five-story building 100x125 feet at a cost of $60,000, has let contract to Theodore Beilharz.

Dallas—Mercantile.—S. A. Nance and associates have incorporated as S. A. Nance & Co. with $10,000 capital.

Dallas—Electric Plant.—Bush Temple will install electric plant at a cost of about $8000.

Dallas—Packing and Provision Company.—Incorporated: Dallas Packing & Provision Co., by C. L. Hudson, Victor E. Andre and F. L. Combs, Jr.; capital $5000.

Denton—Water-works.—City contemplates issuing $25,000 of bonds for the construction of water-works; installation of electric-light plant is also under consideration. W. L. McCormick is mayor.

Elmina—Dry-kiln.—National Dry-Kiln Co. has contract to rebuild dry-kiln of the Walker County Lumber Co., reported burned last week; to be of brick, 20x104 feet.

El Paso—Glass Factory.—It is reported that J. F. Tibbetts of Riverside, Cal., contemplates establishing glass factory. About $75,000 will be invested.

Fort Worth—Ice Company.—Citizens' Ice Co. has incorporated, with $10,000 capital, to manufacture ice; incorporators, R. W. Almord, J. S. Bond, E. H. Keller.

Galveston—Grade-raising.—Ed Ketchum has contract to raise the grounds of the Garten Verein to conform to the new level of the city as previously reported.

Giddings—Broom Factory.—Horace Mundine has removed broom factory from Tanglewood, Texas, to Giddings, and will operate it in connection with R. W. Harris, who has purchased a half-interest. New machinery will be installed and the capacity increased.

Houston—Cotton Company.—G. R. Bennett, J. M. Moore and G. W. Armstrong have incorporated the Bennett Cotton Co., with $6000 capital.

Houston—Oil Wells.—Cedar Bayou Oil Co. has been incorporated, with $15,000 capital, to operate oil wells, by D. B. Cherry, F. P. Eastburn, Betty Bryan and associates.

Lancaster—Cotton Gin.—R. P. Henry and Howard Jones have purchased site on which to erect cotton gin.

Merkel—Mercantile.—J. T. Dennis and others have incorporated the Dennis Mercantile Co. with $10,000 capital.

Palacios—Oil Wells.—Incorporated: Tackett-Robinson Oil Co., with $5000 capital, by W. C. Moore of Houston, Texas; J. H. Homes of Gibson, Ill.; Charles Carter of Piedmont, Mo., and associates, to drill for oil.

Palmer—Cotton Gin.—Local parties have purchased, will enlarge and operate the gin of L. Scales & Co.

San Antonio—Silver-mining.—Incorporated: Ruby Silver Mining Co., with $10,000 capital, by Otto Wahrmund, Otto Koehler, S. G. Newton and associates.

Tamina—Oil Wells.—Chartered: Dick Nailor Oil Co., with $30,000 capital, by J. C. Nailor, D. C. Jones, R. B. Smith and associates to drill for oil.

Wichita Falls—Oil Refinery.—Reports state that D. E. Wilson contemplates establishing petroleum-oil refinery.

VIRGINIA.

Atkins—Lumber Company.—Glade Mountain Lumber Co. has been incorporated with Carlton A. Randolph, president; Thomas S. Stewart, vice-president, and Frank E. Highley, secretary-treasurer; capital $200,000.

Bedford City—Telephone System.—Southside Rural Telephone Co. has been organized, with $10,000 capital, to construct and operate telephone system in Bedford county. A. J. Gillaspie is president; Dr. S. H. Price, vice-president; J. M. Speece, secretary-treasurer, and Thomas Pollard, general manager.

Big Stone Gap—Coal Company.—Incorporated: South & West Coal Co., with $25,000 capital. R. B. Alsover is president; R. A. Ayers, vice-president, and W. H. Hylton, secretary-treasurer.

Burkeville — Drug Company. — Burkeville Drug Co. has incorporated with $3000 capital. John H. Young is president; Alvah Ramsey, vice-president, and J. F. Bosley, secretary-treasurer.

Danville—Mercantile.—Park Place Mercantile Co. has been incorporated with $25,000 capital. D. A. Overbey is president and treasurer; H. R. Fitzgerald, vice-president, and W. G. Swanson, secretary.

Deerfield—Coal Mines.—It is reported that a company has been formed to develop coal deposits on the land of D. S. Taylor and Ida and Etta Summers, near Deerfield.

Lynchburg—Foundry and Machine Shop.—Incorporated: Hubbard Foundry and Machine Works, with P. C. Hubbard, president; C. W. Gooch, vice-president, and A. B. Dabney, secretary-treasurer, to deal in and manufacture machinery and structural iron, etc.; capital $20,000.

Lynchburg—Sewerage System.—Harry L. Shaner, city engineer, has completed plans for the extension of sewerage system at a cost of $2500, and work will begin at once.

Newport News — Brewery. — Old Dominion Brewery Co. has been organized, with S. A. Wortman, president, and H. G. Kimmick, treasurer and general manager, to take over and complete the erection of brewery of the Warwick Brewing & Ice Co. About $350,000 has been expended and $100,000 additional will be utilized in putting the plant in operation.

Norfolk—Real Estate.—West Park View Corporation has been incorporated with $1000 capital. Hubert D. Ward of Portsmouth, Va., is president; J. W. Hough, vice-president, and S. Heth Tyler, secretary-treasurer.

Norfolk — Mercantile. — W. H. Wales, Jr., Corporation has been incorporated with $25,000 capital. W. H. Wales, Jr., is president; J. F. Wilson of Portsmouth, Va., vice-president, and Henry Thum, secretary-treasurer.

Petersburg — Paint Works.—Incorporated: Globe Roof Paint & Oil Co., with $1000 capital. R. J. Baldwin is president, and R. A. Hall, secretary.

Petersburg — Fertilizer Factory. — W. H. Camp is erecting building 80x130 feet, which will be equipped as fertilizer factory.

Roanoke—Ice Plant.—Roanoke Ice & Coal Co. has incorporated with an authorized capital of $50,000 to manufacture ice, etc. J. A. Fishburn is president; Charles R. Fishburn, vice-president, and W. F. Nottingham, secretary-treasurer.

South Boston—Hardware Company—Incorporated: Old Dominion Hardware Co., with $5000 capital. R. T. Aunspaugh is president; T. C. Wright, secretary.

South Boston—Lumber Company.—Bouldin Lumber Co. has been incorporated with $25,000 capital and W. E. Reese of Natalie, Va., president, and Claiborne Bouldin of South Boston, secretary-treasurer.

Waynesboro—Grain Elevators, Grist Mills. Waynesboro Milling Co. has incorporated, with $15,000 capital, to operate grist mills, grain elevators, etc. J. C. Plaine of Crimora, Va., is president; J. B. Patterson of Barterbrook, Va., vice-president, and O. L. Cohron of Stuarts Draft, Va., secretary-treasurer.

Winchester—Electric-light Plant.—City is considering the municipal ownership of electric-light plant. Address The Mayor.

Woodstock — Coal Mining, etc. — Incorporated: Shenandoah Oil, Coal & Mineral Co., with $200,000 capital. Dr. Samuel McCue of Meadow Mills, Va., is president; Nathan Markley, vice-president; James G. McCune, secretary, and George W. Koontz, treasurer.

WEST VIRGINIA.

Beckley—Feed Mill.—Curtis & Phipps, reported last week as to build feed mill, will erect one two-story building 26x56 feet and one one-story building; R. N. Ellis, architect in charge.

Belington—Tannery.—Geo. T. Hoffman of Malta, Ohio, is investigating site with a view to removing tannery to Belington.

Benwood — Coal-plant Improvements. — Hitchman Coal Co. is making extensive improvements to its coal plant at South Benwood, including the enlargement of bins from 600 tons capacity to 1200 tons.

Cameron—Telephone System.—Carmel Telephone Co. has applied for franchise to construct telephone system.

Charleston — Lumber Company.— Edwards Lumber Co. has been incorporated, with capital of $10,000, by Samuel Edwards, I. E. Hodge, H. L. Wehrle of Charleston, Gates Edwards, Reedysville, W. Va., and Jacob Burkett of Hartwell, Ohio.

Sloto—Mining and Manufacturing.—Kermit Coal & Lumber Co. has incorporated, with $500,000 capital, to mine coal, manufacture lumber, etc.; incorporators, Augustus C. Fransioli, Charles Nicholson of Brooklyn, N. Y.; Lloyd Perry, Belle M. Burchill of New York, N. Y., and Lady F. Griffin of Mt. Vernon, N. Y.

OKLAHOMA TERRITORY.

Chandler—Gas and Oil Wells.—Robert Weaver of Sibony, O. T.; M. A. Mayfield of Schofield, O. T.; D. L. Ryan of Manitou, O. T.; G. W. Johnson of Peru, Kan., and associates have incorporated the Farmers & Merchants' Gas & Oil Co., with $50,000 capital.

Hitchcock — Mercantile. — Hitchcock Mercantile Co. has been incorporated with $10,000 capital by J. E. Welty and others.

Newkirk—Flour Mill.—Thomas Bros. will establish 125-barrel flour mill at Newkirk, and not at Shawnee, as reported last week.

Oklahoma City — Engineering.—Territorial Engineering Co. has been incorporated, with $25,000 capital, by W. C. Burke, F. H. Peckham and W. L. Cunningham, to construct irrigation ditches, railroads, street railways, etc.

Oklahoma City—Viaduct.—John Gilligan Construction Co. has contract at $11,000 for constructing the approaches to the Walnut-street viaduct.

Oklahoma City—Asphalt Mining.—Union Asphalt Mining Co. has been incorporated, with $250,000 capital, by A. T. Hamilton, E. L. Ralls, Addie S. Ralls, Cora Hinschcliff, J. M. McKenzie and Joe Dill of Oklahoma City and Adelbert Hughes of Guthrie to mine asphalt. Mr. Hamilton was previously reported as to organize company and install 50-ton plant for refining asphalt.

BURNED.

Baileyton, Ala.—W. H. Martin's cotton gin; loss $2500.

Baltimore, Md.—Feed store and warehouse of Henry Eidman & Bro., Pennsylvania avenue and Gold street; loss $15,000.

Bastrop, La.—Bastrop Oil and Fertilizer Works' oil-mill hullhouse; loss $20,000.

Bayou Sara, La.—J. F. Irvine & Son's cotton gin; loss $4000.

Birmingham, Ala.—Portland Cement Co.'s warehouse; loss $25,000.

Blairsville, Ga.—V. M. Waldroop's cotton gin; loss $1300.

Bridgeport, Texas.—J. W. Malone's cotton gin; loss $6000.

Conner, Texas.—J. N. Thompson & Sons' cotton gin.

Curtis, O. T.—S. E. Boggess' store; loss $20,000.

Glenwood, Fla.—Bond Lumber Co.'s shingle mill; loss $2000.

Hamburg, Ala.—J. R. Robbins' cotton gin.

Haulk, Texas.—S. C. Kelly's cotton gin.

Huron, Miss.—James E. Lee's cotton gin; loss $5000.

Kiowa, I. T.—Pitts & Jackson's cotton gin; loss $5000.

Lacoola, Texas.—D. M. Donohue & Sons' cotton gin.

Manheim, W. Va.—Manheim Portland Cement Co.'s plant; loss $45,000.

Memphis, Tenn.—Dickson Lumber Co.'s plant; loss $50,000.

Memphis, Tenn.—Hardwood Specialty Co.'s dry-kiln.

Mt. Pleasant, Tenn.—Mt. Pleasant Milling Co.'s flour mill.

Midlothian, Texas.—Midlothian Cotton Oil Co.'s mill; loss $4000.

Offerman, Ga.—Southern Pine Co.'s dry-kiln.

Ooltewah, Tenn.—Chattanooga Powder Co.'s pulverizer; loss $2000.

Portia, Ark.—Brettan & East's cotton gin.

Poulan, Ga.—Saw-mill of M. A. Moore of Valdosta, Ga.; loss $10,000.

Satilla Bluff, Ga.—Hilton-Dodge Lumber Co.'s mill destroyed by boiler explosion.

Saxonholm (P. O. Poydras), La.—Mrs. B. S. Story's residence; loss $150,000.

Still Pond, Md.—Rich & Haggerty's creamery; loss $4000.

Thibodaux, La.—E. Caillouet & Bro.'s sugar mill.

Tuckerman, Ark.—Geo. W. Decker's cotton gin; loss $25,000.

Tuscumbia, Ala.—J. A. McWilliams' cotton gin; loss $5000.

Walter, Ala.—Schultz & Elkins' cotton gin; loss $2000.

Whitehall, Va.—J. H. Hardy's warehouse; loss $2000.

Wildersville, Tenn.—Spellings-Rosser Stave Co.'s factory.

Wingate, N. C.—Small Bros.' saw and planing mill; loss $100,000.

BUILDING NOTES.

*Means machinery, proposals or supplies are wanted, particulars of which will be found under head of "Machinery, Proposals and Supplies Wanted."

Abbeville, Ga.—Store Buildings.—C. F. J. Bene of Cincinnati, Ohio, has purchased site on which to erect five brick store buildings.

Atlanta, Ga.—Dwelling.—Jacob Elsas, president Fulton Bag & Cotton Co., will erect modern residence, and wants to correspond with contractors relative to construction, including all decorations.

Bartow, Fla.—Hotel.—W. W. Clark is in charge of construction of hotel reported last week to be erected by the Bartow Hotel Co. at a cost of $25,000. S. H. Page prepared the plans.*

Birmingham, Ala. — Church. — Five Points Methodist Church contemplates erecting edifice. Dr. J. H. McCoy is pastor.

Braidentown, Fla.—Business Block.—Vanderipe Bros. will erect $10,000 brick business block.

Chattanooga, Tenn.—Apartment-house.—W. R. Long, proprietor Model Laundry, has had plans prepared by Bearden & Foreman for the erection of four-story apartment-house.*

Chattanooga, Tenn. — Warehouse.— Newell Sanders Plow Co. will erect brick warehouse to cost $5000.

Columbia, S. C.—College Buildings.—Granby & Jordan of Greenville, S. C., have contract to construct proposed buildings at Hyatt Park for the Columbia Female College; cost $100,000.

Cordele, Ga.—Warehouse.—H. L. Finger has contract to erect proposed warehouse for James B. Kelly; to be of corrugated iron and brick, 60x100 feet.

Cordele, Ga.—Business Building.—Dooly Soda Water Co. has let contract to Little & Phillips for the erection of building.

Denison, Texas—Business Building.—Hanna Bros. are erecting two-story pressed-brick building with glass and stone front at a cost of $12,000.

Fort Worth, Texas—Business Building.—Lusher & Rockett are erecting two-story business building at a cost of $11,000.

Fort Worth, Texas—Business Building.—Bryce & Newell have contract to erect proposed building for T. B. Ellison; structure to be of brick, five stories, 100x150 feet.

Fort Worth, Texas—Lodge Building.—Fort Worth Lodge No. 251, I. O. O. F., is having plans prepared for the erection of three-story brick lodge building to cost $20,000.

Gastonia, N. C.—Bank Building.—New bank organized by George A. Gray, J. A. Glenn and associates will erect bank building.

Gloster, Miss. — Store Building. — Gloster Wholesale Grocery Co., previously reported incorporated with $15,000 capital, has had plans prepared by G. H. Umberger for the erection of building 50x80 feet.

Hattiesburg, Miss.—Depot and Hotel.—Gulf & Ship Island Railroad will erect depot and five-story hotel on site recently purchased by J. T. Jones, president, Buffalo, N. Y.

Hot Springs, Ark.—Armory.—R. Hart has completed plans for proposed $10,000 armory; to be of concrete and steel, 125x125 feet, and have a seating capacity of 5000.

Houston, Texas—Lodge Building.—Robert Thompson has contract at $10,000 to erect proposed two-story brick lodge building 100x50 feet for the I. O. O. F.

Huntington, W. Va. — Postoffice. — Brady Construction Co., Fairmont, W. Va., were lowest bidders at $95,973 for the erection of postoffice building previously reported, and will probably receive contract.

Jackson, Miss.—Business Building.—F. J. McGraw has contract to erect Winter Building; to be three stories, stone front with terra-cotta trimmings.

Jacksonville, Fla.—Store and Office Building.—Reports state that Beacham & Shackleton will erect 10-story store and office building, 52½x117 feet, of steel, stone and brick, at a cost of $200,000.

Kansas City, Mo. — Warehouse. — Bemis Bros. Bag Co. will erect six-story brick warehouse at 925 Wyoming street at a cost of $40,000.

Knoxville, Tenn.—Apartment-house.—W. C. Terry has purchased site on which to erect apartment-house.

Little Rock, Ark.—Business Building.—John W. Lippincott will erect two-story brick building 50x190 feet.

Little Rock, Ark.—Business Building.—M. E. Dunn will erect three-story building.

Little Rock, Ark.—Store and Office Building.—A. Brizzolara is erecting two-story brick store and office building at a cost of $18,000.

Louisville, Ky.—Apartment-house.— Albert I. Straus will erect three-story brick apartment-house 20x190 feet, to be heated by steam or hot water.*

Louisville, Ky.—Adas Israel Congregation has accepted plans by Kenneth McDonald & J. F. Sheblessy for temple previously reported to be erected at a cost of $100,000.

Marion, S. C.—Store Building.—Mrs. M. E. McMillan will erect brick store building.

Markham, Texas—School Building.—Trustees of Markham Independent School District have let contract to S. T. Standiford at $4290 for the erection of proposed school building.

Mineral Wells, Texas—Hotel.—W. H. Boykin of Dallas, Texas, will erect 50-room brick hotel.

Mobile, Ala.—Depot.—Bids will be received until December 10 by the Southern Railway, C. H. Ackert, general manager, Washington, D. C., for the erection of $100,000 union passenger station (previously reported) after plans by P. Thornton Marye, architect, Richmond, Va., which may be seen at the ticket office of the Southern Railway, corner Royal and St. Francis streets, Atlanta, Ga.

Monroe, La.—Seedhouse.—Planters' Oil Mill will not rebuild until next summer seedhouse reported burned last week at a loss of $15,000.

Monticello, Ark.—Hotel.—J. L. Allen has purchased site on which to erect $10,000 hotel.

Moody, Texas—School Building.—City has voted affirmatively the proposed $12,000 bond issue for the erection of school building. Address The Mayor.

Nashville, Ga.—Bank Building.—Farmers' Bank of Nashville will erect two-story bank building.

Nashville, Tenn.—Clubhouse.—Ward Seminary, Dr. J. D. Blanton, president, will erect clubhouse on site recently acquired.

Newport News, Va.—Business Building and Apartment-house.—L. F. Barnes has let contract to Holzclaw Bros. of Hampton, Va., for the erection of three-story brick building after plans by J. W. Lee of Norfolk, Va. Mr. Barnes will later build an apartment-house.

Oklahoma City, O. T.—Dwelling.—Geo. W. Loop is having plans prepared by G. W. Van Meter for the erection of 10-room residence.

Pulaski, Tenn.—College Building.—Arrangements are being made for rebuilding Martin Female College, reported burned last week at a loss of $75,000. B. F. Haynes is president.

Quitman, Ga.—Barn, Shed, etc.—J. G. Stanley will rebuild barn and wagon shed reported burned last week.

Richmond, Va. — Warehouse. — Hunter B. Frischkorn has purchased site on which to erect four-story brick and stone warehouse, 40x106 feet, at a cost of $30,000.

Richwood, W. Va.—Business Block.—Geo. W. Vredenburg has contract to erect four-story business block, 120x110 feet.

Rockville, Md.—Bank Building.—W. E. Speir, Bliss Building, Washington, D. C., has contract to erect bank building for the Montgomery County National Bank, previously reported.

Sandersville, Ga.—Office Building.—It is reported that Dr. William Rollins and Judge B. T. Rollins will erect brick office building.

Somerset, Ky. — Store Building. — Cumberland Grocery Co. has purchased site on which to erect building.

South McAlester, I. T.—Business Block.—S. Crowl is having plans prepared for the erection of two-story brick business block.

St. Augustine, Fla.—Hotel Improvements.—Ira C. Rinehart, proprietor Granada Hotel, contemplates erecting five-story addition. An electric-light plant will also be installed.

Stillwater, O. T. — Courthouse. — Payne county has voted against the bond issue reported last week for the erection of courthouse; A. L. Brockman, clerk.

Tuscumbia, Ala. — Bank Building. — Merchants' Bank will erect bank building.

Washington, D. C.—Dwelling.—B. F. Leighton has permit to erect two-story brick residence at 1715 22d street N. W. at a cost of 17,000.

Wills Point, Texas—Store Building.—W. R. Howell has had plans prepared by W. H. Keyser for the erection of one-story building 25x100 feet, of pressed brick, iron and plate-glass front, concrete floor, and costing $3000, to replace structure burned last week. Finney & Swann, druggists, will occupy building.*

Wilmington, N. C.—Hotel.—Hook & Sawyer, Charlotte, N. C., have prepared plans for 100-

room hotel, previously reported to be erected at Wrightsville Beach by W. J. Moore of Charlotte, N. C.

Winston-Salem, N. C.—Storage Warehouse. R. J. Reynolds Tobacco Co. has let contract to Fogle Bros. for the erection of proposed storage warehouse, and work on building has begun.

Yazoo City, Miss. — Infirmary. — King's Daughters are having plans prepared for the erection of proposed infirmary.

RAILROAD CONSTRUCTION.

Railways.

Abilene, Texas.—The San Saba Construction Co., capital $1,000,000, has been chartered to build railroads in Texas and Mexico. Some of the incorporators are interested in the proposed Colorado, Texas & Mexico Railroad Co., which proposes to build from Abilene to Llano, Texas, about 200 miles. The incorporators are Morris R. Locke, John M. Blackburn, Charles A. Thompson, Fred Cockrell, John W. Hampton, Abilene, Texas; Carl H. Jewell, Boston, Mass., and Ira Mowery, Morristown, N. J.

Arkansas City, Kan.—Mr. L. H. P. Northrup writes the Manufacturers' Record that the Kansas-Oklahoma Interurban Railway will run from Winfield, Kan., to Arkansas City, Kan., 15 miles, and from Arkansas City to Chilocco, Okla., six and one-half miles, with nine miles in Winfield and Arkansas City, making 30½ miles. The surveys, right of way, profiles, maps and all preliminary work is done, and contract for the grading from Arkansas City to Chilocco is let. Work will commence in 10 days. T. V. Hall is chief engineer.

Braidentown, Fla.—Col. John A. Graham has purchased the Dr. J. H. Mills franchise for electric railway through Ybor City to Sulphur Springs, and work will begin shortly.

Bristol, Tenn.—The Virginia & Southwestern Railway Co. has been chartered in Virginia, with capital of from $1,000,000 to $10,000,000, to build a line in Lee, Wise, Scott, Wythe, Tazewell and Giles counties, and to extend from a point on the Tennessee boundary to some point on the Virginia & Southwestern Railway in Tennessee. The directors are Oliver H. Payne and Grant B. Schley of New York, Walter Ferguson and Henry K. Mellarg of Stamford, Conn.; John B. Newton, J. Bewley and D. D. Hull, Jr., of Bristol, Tenn. A director is reported as saying that John D. Rockefeller and other capitalists are behind the plan; also that the road will carry coal to Hampton Roads or some other point on the Chesapeake bay.

Carrizo Springs, Texas.—Mr. William H. Davis writes the Manufacturers' Record that Mr. W. A. Squires of Carrizo Springs is promoting the construction of a railroad from that place to connect with the International & Great Northern Railroad in La Salle county. Engineers are now locating the line.

Chester, Pa.—Senator W. C. Sproul of Chester is reported to have purchased a one-half interest in the Coal River & Western Railway of Charleston, W. Va., which owns 25 miles of line from St. Albans, W. Va., up Coal river to the Forks of Coal and up Briar creek; also that a meeting is to be held at Charleston on November 22 to decide about an extension. He writes the Manufacturers' Record confirming the report of the deal, but says that it is not intended by him or his associates to make any extensions of any great amount at present.

Chicago, Ill.—Concerning the report that the Yazoo & Mississippi Valley Railroad (Illinois Central system) would build an extension from Greenwood, Miss., to Belzoni, Miss., an official informs the Manufacturers' Record that no such work has been authorized.

Cumberland, Md.—De Warren H. Reynolds and W. A. Morgart of Cumberland are said to be the promoters of the proposed electric railway between Hagerstown, Md., and Waynesboro, Pa., for which rights of way have been secured for the entire distance. They are reported to have purchased Washington county's interest in the Waynesboro turnpike.

Deerfield, Va.—It is reported that a railroad will be built from a connection with the Chesapeake & Western Railway to coal lands owned by Mrs. Ida and Etta Summers and Mr. D. S. Taylor near Deerfield.

El Dorado Springs, Mo.—W. S. Allison, one of the incorporators of the Jefferson City, Jerico & Southwestern Railway, writes the Manufacturers' Record that the J. A. Ware Construction Co., Houser Building, St. Louis, Mo., is to begin construction between Lamar and Jerico Springs, Mo. The grade stakes have been set on the first 20 miles by J. F. Reinke for the construction company. The line is to be 125 miles long, connecting Lamar, Jerico Springs, Eldon and Minden, Missouri.

Farmerville, La.—The Farmerville & Southern Railroad of the Missouri Pacific system has been opened to passenger traffic.

Galveston, Texas.—It is reported that a charter will shortly be filed for the Peach River Railroad Co. to build a line from Willis, in Montgomery county, to Beaumont, Texas, through a timber and oil country. Messrs. Minor, Vidor and Miller of Galveston are said to be interested, together with Iowa capitalists.

Hattiesburg, Miss.—It is reported that the Mississippi Central Railroad will extend its line from Silver Creek to Brookhaven, about 30 miles, and that it will apply for a change of name to the St. Louis, Pascagoula & Panama Railroad. F. L. Peck is president at Hattiesburg.

Houston, Texas.—The Southern Pacific will, it is reported, build a cut-off from Beeville to Spofford, Texas, about 160 miles. A. V. Kellogg is engineer maintenance of way at Houston.

Jackson, Miss.—President Wirt Adams of the Mississippi-Indiana Land & Investment Co. is reported to have received the report of Chief Engineer W. R. Paige of Terre Haute, Ind., stating that the plan to build an electric railway connecting Jackson and Vicksburg via different towns is perfectly feasible. The directors are expected to meet soon to decide on coastruction.

Jackson, Miss.—The Illinois Central Railroad is reported to be grading and ballasting its tracks between Jackson and New Orleans, putting in stone instead of gravel.

Kansas City, Mo.—The full list of incorporators of the Missouri, Oklahoma & Gulf Railway, lately chartered in Oklahoma to build a line from a point in the northeastern part of the Indian Territory to Shawnee, O. T., is as follows: William Kenefick, Kansas City; W. P. Denan, Muskogee, I. T.; W. L. Stuckey, Fayetteville, Ark.; J. C. Duffy, Chicago; Horace Speed, J. W. McNeal and M. L. West, Guthrie.

Kansas City, Mo.—The Kansas City, Mexico & Orient Railway is reported to have practically finished its track all the way from Wichita, Kan., to the crossing of the Canadian river in Oklahoma.

Knoxville, Tenn.—Goodman & Spradling and Allsup Bros. of Knoxville are reported to have taken subcontracts on the Atlanta, Knoxville & Northern extension between Wetmore, Tenn., and Cartersville, Ga.

Knoxville, Tenn.—C. D. Dunn has taken a subcontract on the extension of the Atlanta, Knoxville & Northern Railroad from Wetmore, Tenn., to Cartersville, Ga. All the work (88 miles) is said to be sublet except 20 miles east of Dalton, which will be done by the principal contractors, Wright, Williams & Wadley of Birmingham, Ala.

Marietta, Ohio.—Gen. A. J. Warren of Marietta informs the Manufacturers' Record that there is no foundation for the press report that he and other Ohio capitalists would complete the Gainesville & Dahlonega Railroad in Georgia.

Mobile, Ala.—The Mobile, Jackson & Kansas City Railroad will, it is reported, do considerable improvement work to the existing grade. Trestles will be filled and the roadbed graveled. The Mobile terminals will also be improved. A. N. Bullitt is chief engineer. He writes the Manufacturers' Record that no work is to be done for some time.

Natchez, Miss.—President A. G. Campbell of the Natchez & Gulf Railroad, lately incorporated, informs the Manufacturers' Record that it is proposed to build 192 miles of line from Natchez to Gulfport, Miss., but that no construction has yet been done. The other officers are A. W. Lambert, vice-president; S. H. Lowenburg, treasurer, and W. H. Shields, secretary, all of Natchez. W. W. Hungerford of Gulfport is chief engineer.

Newbern, N. C.—The Blades Lumber Co. will, it is said, build an extension of 25 miles to its railroad.

Newbern, N. C.—The Broaddus & Ives Lumber Co. will, it is reported, extend its narrow-gauge railroad.

New Orleans, La.—Mr. William P. Curtis, vice-president and general manager of the Borgnemouth Realty Co., writes the Manufacturers' Record that he is individually interested with others in a plan to build the proposed electric railway from New Orleans via Chalmette and Borgnemouth to St. Bernard Court House, about 15 miles. The railway company has not yet been organized.

New Orleans, La.—The Morgan's Louisiana & Texas Railroad (Southern Pacific system) has completed its branch from Raceland, La., to Lockport, La., both in Lafourche parish.

Oak Grove, Mobile County, Ala.—The Oak Grove & Georgetown Railroad Co., lately organized in Alabama, has also obtained a charter in Mississippi to carry its line to Leakesville. The officers are M. L. Davis, president and general manager; A. S. Boullet, secretary and treasurer, and the directors are M. L. Davis, B. C. Davis and J. W. Whiting.

Oklahoma City, O. T.—It is reported that the Oklahoma & Texas Railway Co. (M., K. & T. system) proposes to build an extension from Oklahoma City southwest. F. N. Finney of Oklahoma City is president. Another report says that a contract has been let to McCabe & Steen for a line from Oklahoma City to Wichita Falls, Texas, and that work will begin after election day.

Pittsburg, Pa.—R. C. McChesney and Wm. H. McKinley of Pittsburg, Thomas H. Deegan of Philadelphia and J. M. Wright of Meyersdale, Pa., are reported to be interested in a plan to build an electric railway from Frostburg, Md., to Meyersdale, Pa.

Portsmouth, Va.—The Seaboard Air Line Railway will, it is reported, extend the yards at Wilmington, N. C. W. W. Gwathmey, Jr., is chief engineer. He informs the Manufacturers' Record that the character and extent of the work have not yet been determined.

Richmond, Va.—The Chesapeake & Ohio Railway is reported to be surveying for an extension from Elkhorn City, Ky., into Wise county, Virginia, along Elkhorn creek. The line from Whitehouse, Ky., to Elkhorn City is under construction. F. I. Cabell is engineer of construction.

St. Louis, Mo.—Concerning the report that the Missouri Pacific Railway proposes to build a line from Fort Smith, Ark., to Sherman, Texas, an official writes the Manufacturers' Record that he has no information regarding the project.

St. Louis, Mo.—An officer of the Frisco system informs the Manufacturers' Record that he has no knowledge of any plan of that company to build the Mississippi, Louisiana & Texas Railroad from Shreveport, La., via Hattiesburg, Miss., to Mobile, Ala.

St. Louis, Mo.—The Missouri, Kansas & Texas Railway will, it is reported, enlarge the yards at Cleburne, Texas. S. B. Fisher is chief engineer at St. Louis.

Savannah, Ga.—The Georgia, Florida & Alabama Railway is reported to have filed a mortgage to secure $1,000,000 bonds for extensions to be made northward from Cuthbert toward Atlanta via either Richland or Lumpkin, or for making other extensions elsewhere in Georgia or Florida. J. P. Williams is president at Savannah.

Union Springs, Ala.—Mr. W. M. Blount, president of the Union Springs & Northern Railway, who is one of the incorporators of the Augusta & Florida Railway, lately chartered in Georgia to build a line from Augusta, Ga., to Midville, Ga., writes the Manufacturers' Record that the line has been graded with the exception of 8 or 10 miles. G. S. Burchell is engineer in charge. Allen W. Jones of Midville, Ga., can give information as to progress.

Warren, Pa.—W. D. Todd, E. E. Allen and P. M. Welkins of Warren, Pa., are, it is reported, the principal incorporators and stockholders of the Oklahoma & Cherokee Railroad chartered at Guthrie, O. T.

Washington, D. C.—A. C. Ridgway of Denver, Col., vice-president of the Chesapeake Beach Railway, is reported as saying that the line from Washington to Chesapeake Beach, 24 miles, will be converted from steam to electricity, and will be made double-track. The Washington address of the company is 1116 New York avenue. P. Y. Waters is general manager.

Washington, D. C.—Concerning the report that the Southern Railway would build a line from Gainesville, Ga., to Rome, Ga., an officer informs the Manufacturers' Record that he has heard nothing officially about any such plan, and that no surveys have been made.

Wilmington, N. C.—M. Riddle, Jr., assistant chief engineer Atlantic Coast Line Railroad, writes the Manufacturers' Record that contract for work in connection with the proposed export terminal at Jacksonville, Fla., has been awarded to Mr. William T. Cotter of Jacksonville. The work involves a large amount of track work, as well as a sawtooth wharf 2180 feet long.

Winter Park, Fla.—J. M. Cheney, H. H. Yowell and H. W. Greetham have incorporated the Winter Park Electric & Fuel Co., capital $25,000, to construct and operate an electric plant and railway.

Yellow Pine, Ala.—The railroad which is being built by the E. W. Gates Lumber Co. is named the Washington & Choctaw Railroad, and J. E. Cypret is superintendent of construction.

Street Railways.

Baltimore, Md.—The United Railways & Electric Co. has applied to the city council for franchises to build two extensions—one from North avenue, along Callow avenue several blocks to Druid Hill Park, and another from the corner of Aisquith and Preston streets to Federal street, and thence along the latter to the eastern city limits, about two miles. Both extensions are to be double-tracked.

Birmingham, Ala.—The Birmingham Railway, Light & Power Co. has, it is reported, been granted a franchise to build three miles of line in East Lake.

Chattanooga, Tenn. — The Chattanooga Electric Railway will, it is reported, lay heavy rails on Market street.

Danville, Ky.—Ground has been broken for the new electric-light plant, and it is stated that construction of the railway from Danville to Junction City, four miles, will begin about January 1. Frank Snyder of St. Louis has the franchise.

Denton, Texas.—Mr. Lee of Sherman, Texas, is reported to be working on a plan for a street railway in Denton.

Guthrie, O. T.—The Guthrie Electric Light & Power Co. has been chartered and will, it is reported, build a street railway. J. H. Cottingham and O. C. Guss, president of the Guthrie National Bank, and Thomas H. Smith of Denver, Col., are incorporators.

Hattiesburg, Miss.—F. W. Foote will, it is reported, apply for a street-railway franchise in Hattiesburg.

Meridian, Miss.—The Meridian Railway & Light Co. will, it is reported, spend $100,000 for improvements, including an extension of one and one-half miles. J. A. Gibson is secretary and treasurer.

Morristown, Tenn.—It is reported that a company has been organized to build an electric-street railway in Morristown, and that application has been made to the secretary of State for a charter. J. J. N. Sykes of Morristown represents the company.

Uvalde, Texas.—J. H. Gerhart has been granted a franchise for a street railway in Uvalde.

MACHINERY, PROPOSALS AND SUPPLIES WANTED.

Manufacturers and others in need of machinery of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery needed we will make their wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. The Manufacturers' Record has received during the week the following particulars as to machinery that is wanted.

Air Compressor.—Apex Equipment Co., 11 Broadway, New York, N. Y., is in the market for air compressor with capacity of 1000 cubic feet per minute with pressure of 100 pounds.

Air Compressors.—See "Pneumatic Apparatus."

Asphalt Machinery. — Hilton J. Doggett, Box 121, Baltimore, Md., is in the market for one sand dryer, one asphalt binder mixer and one asphalt top-coat mixer. (See "Engines and Boilers, Tanks, Railway Equipment.")

Belting.—See "Lumber Plant."

Boiler.—See "Engine and Boiler."

Boiler.—Gen. W. R. Cox, Penelo, N. C., wants prices on 25-horse-power boiler. (See "Engine and Boiler.")

Boilers.—See "Water-works Equipment."

Boilers.—See "Flour-mill Equipment."

Boilers.—See "Engines and Boilers."

Boiler.—See "Engine and Boiler."

Boilers.—Hilton J. Doggett, Box 121, Baltimore, Md., is in the market for one 66x18-horse-power boiler, one 20-horse-power boiler. (See "Engines and Boilers.")

Boilers.—Apex Equipment Co., 11 Broadway, New York, is in the market for three 300-horse-power water-tube boilers.

Bottles.—R. L. Brown, Erwin, Tenn., is in the market for bottles.

Boxes.—R. L. Brown, Erwin, Tenn., is in the market for boxes.

Boxes.—W. F. Spurlin, Camden, Ala., wants addresses of manufacturers of carboys.

Brick-making Machinery.—A. M. Cristof-

fanini, via Garibaldi 18, Genoa, Italy, wants prices f. o. b. Genoa on brick-making machinery of the latest designs. Send full particulars. Send fullest possible details in first letter.

Bridge Construction.—Montgomery Bridge Co., Montgomery, Ala., will open bids November 12 for building steel highway and street-car bridge over the Alabama river at Montgomery, with draw-span and approaches complete. Profile and general specifications on file at office, but each proposal must be accompanied with detailed plans and specifications.

Bronze Tablets.—Sealed proposals will be received until November 7 at United States engineer office, Wilmington, N. C., for furnishing four bronze tablets to be placed upon two monuments which are to be erected on Guilford battleground; R. P. Johnston, captain corps of engineers, U. S. A.

Building Equipment and Supplies.—Bartow Hotel Co., Bartow, Fla., wants prices on steam heating, electric lights, steel ceiling, metal roof, plastering, iron columns, stone window sills and lintels.

Building Equipment and Supplies.—Gen. W. R. Cox, Penelo, N. C., wants prices on roofing and siding.

Building Equipment and Supplies.—Albert I. Straus, 422 West Market street, Louisville, Ky., wants to correspond with manufacturers or dealers relative to a floor deadener.

Building Equipment and Supplies.—Records Contracting Co., Lawton, O. T., wants prices on Bedford stone and artificial stone.

Building Materials.—Dr. F. L. Clymer, Frostburg, Md., wants prices on building materials.

Building Material.—L. C. Garber, Jackson, Miss., wants competitive prices on building material.

Carboys.—See "Boxes."

Carriage Parts.—See "Rubber Goods," etc.

Cider Mill.—W. F. Spurlin, Camden, Ala., wants hand-power cider mill and press.

Cotton-gin Equipment.—R. E. Gabriel, Terrell, N. C., will be in the market for two-stand gin, double-box press and complete equipment. (See "Engine and Boiler.")

Crusher.—Apex Equipment Co., 11 Broadway, New York, N. Y., is in the market for one No. 5 Gates crusher.

Distilling Apparatus.—Wm. F. Schildman, 4037 Hamilton avenue, Cincinnati, Ohio, wants prices on new and second-hand copper stills. Give description, weights, etc.

Electrical Equipment.—See "Building Equipment and Supplies."

Electrical Equipment.—Ashland Fire-Brick Co., Ashland, Ky., will be in the market for electrical equipment.

Electrical Equipment.—Dr. F. L. Clymer, Frostburg, Md., wants prices on electrical equipment.

Electrical Equipment.—Homewood Pottery Co., Mannington, W. Va., wants prices on electrical equipment.

Electrical Equipment.—Virginia Furniture Co., Chase City, Va., wants a good second-hand 50-light dynamo and wire.

Electrical Machinery.—See "Pneumatic Apparatus."

Electrical Machinery.—See "Water-works Equipment."

Electric-light Plant.—Graceville Electric Light & Water Co., Graceville, Fla., wants prices on machinery and equipment for electric-light plant for town of 1000 people. (See "Water-works.")

Engine.—See "Well-drilling Equipment."

Engine.—Apex Equipment Co., 11 Broadway, New York, N. Y., is in the market for one 600-horse-power compound-tandem Corliss engine.

Engines.—See "Flour-mill Equipment."

Engines.—S. F. Perkins, Manatee, Fla., is in the market for gasoline marine engines. State lowest prices to dealers and freight rate from factory to Manatee, Fla.

Engine and Boiler.—Ricks Bros., Garden Valley, Ga., want boiler and engine. (See "Lumber Plant.")

Engine and Boiler.—R. E. Gabriel will be in the market for 25-horse-power engine and boiler. (See "Cotton-gin Equipment.")

Engine and Boiler.—Gen. W. R. Cox, Penelo, N. C., wants prices on 25-horse-power engine and 25-horse-power boiler.

Engines and Boilers.—Crossville Lumber Co., Crossville, Tenn., wants prices on engines and boilers.

Engines and Boilers.—Hilton J. Doggett, Box 121, Baltimore, Md., is in the market for one 10-horse-power engine, one 50-horse-power engine, one 66x18-horse-power boiler, one 20-horse-power boiler.

Excelsior.—See "Mattress-factory Equipment."

Feed Mill.—Manor Trading Co., Manor, Ga., is in the market for feed mill to grind ear corn, including shock and cob.

Fertilizer-factory Equipment.—E. O. Painter Fertilizer Co., Jacksonville, Fla., wants prices on acid eggs and air pump for pumping acid.

Flour-mill Equipment.—Dr. Wm. H. Marsh, secretary the Calvert Milling & Manufacturing Co., Solomons, Md., wants prices on boilers, engines and milling machinery.

Foundry.—Eureka Supply Co., Chamberlain Building, Chattanooga, Tenn., wants to correspond with some malleable foundry regarding the manufacture of a patented reversible plow clevis in carload lots.

Gas Generators.—R. L. Brown, Erwin, Tenn., is in the market for generators for carbonic gas.

Grist Mill.—Gen. W. R. Cox, Penelo, N. C., wants prices on grist mill.

Handles.—Ernst Bunge, 124 Boulevard de Strasbourg, Havre, France, wants addresses of manufacturers and exporters of pitchfork handles.

Heating Apparatus.—James Knox Taylor, supervising architect, Treasury Department, Washington, D. C., will open bids November 17 for low-pressure steam-heating apparatus, complete in place, for the United States post-office and courthouse at Athens, Ga., in accordance with drawings and specifications, copies of which may be had at office of supervising architect or at the office of the superintendent at Athens, Ga., at the discretion of the supervising architect.

Heating Apparatus.—See "Building Equipment and Supplies."

Heating Apparatus.—W. R. Long, proprietor Model Laundry, 715-717 Walnut street, Chattanooga, Tenn., wants to correspond with parties relative to steam and hot-water heating.

Hoisting Apparatus.—Manor Trading Co., Manor, Ga., is in the market for a hand hoist for lifting loads from wagons and placing loads about 10 feet around.

Ice Plant.—Craig-Flanigan Harness Co., Statesville, N. C., will be in the market for machinery and equipment for 10-ton ice plant.

Iron Works.—See "Building Equipment and Supplies."

Laundry Machinery.—Oglesby & Brewer, Elberton, Ga., want to correspond with manufacturers of machinery for steam laundry.

Lumber.—See "Telephone Equipment."

Lumber Plant.—Rocks Bros., Garden Valley, Ga., want saw-mill complete, tram engines, log carts, belting, engine and boiler, dry-kilns, trucks, etc.

Machine Tools.—J. D. Mallory & Co., 410-428 East Cross street, Baltimore, Md., is in the market for one hand-power side-cutting shear that will make a cut of about 18 inches through three-sixteenths-inch iron; one hand-power screw punch for punching one-eighth-inch iron; second-hand preferred. To be used in making stack.

Marine Engines.—See "Engines."

Mattress-factory Equipment.—Livingston & Easton, St. Martinsville, La., want addresses of manufacturers of machinery for making mattresses; also in the market for excelsior for mattresses and moss-picking machine.

Mill Supplies.—Dr. Frank L. Clymer, Frostburg, Md., wants prices on mill supplies.

Moss-picking Machines.—See "Mattress-factory Equipment."

Oil-mill Machinery.—Tennessee, care Manufacturers' Record, wants prices on complete outfit for two-press cottonseed-oil mill.

Oils.—A. M. Cristoffanini, via Garibaldi 18, Genoa, Italy, wants proposals on mineral oils. He is in a position to obtain contract for furnishing yearly supply to an important navigation company, and wants to arrange with American manufacturers for the oil. Proposals must give prices f. o. b. New York and c. i. f. Genoa, and be accompanied by one liter of each quality offered. Send fullest possible details in first letter.

Pneumatic Apparatus.—A. M. Cristoffanini, via Garibaldi 18, Genoa, Italy, wants prices f. o. b. Genoa on air compressor which will use 150 horse-power (revolutions to be determined, the motor being electrical, to operate through a scale of 140 meters; for use in naval construction to conduct 90 mma., etc. Give fullest possible particulars in first letter.

Paper.—See "Rubber Goods," etc.

Pump.—See "Fertilizer-factory Equipment."

Railway Equipment.—Hilton J. Doggett, Box 121, Baltimore, Md., is in the market for two oil-tank cars, 6000 to 12,000 gallons, one narrow-gauge tip car, one-half ton capacity.

Railway Equipment and Supplies.—W. T. Cotter, Jacksonville, Fla., is in the market for 20 to 30 side-dump cars, second-hand, in good condition, 36-inch gauge, two to three cubic yards capacity; one 10 to 14-ton locomotive, 36-inch gauge; 4000 feet of track, 25 to 30-pound relayers, with splices and four switches. Give description of cars and locomotive with price delivered at Jacksonville, Fla.; also time of delivery.

Railway Equipment.—Walter A. Zelnicker Supply Co., St. Louis, Mo., wants a large tonnage of 56 and 60-pound relaying rails. Advise quantity, condition, location and lowest price.

Roofing.—See "Building Equipment and Supplies."

Roofing.—See "Building Equipment and Supplies."

Rubber Goods, etc.—I. W. Librowicz, Warsaw, Russia, is in the market for American-made rubber goods, carriage parts and glazed paper.

Safe.—Finney & Swann, Wills Point, Texas, are in the market for safe.

Saw-mill.—See "Lumber Plant."

Saw-mill.—Gen. W. R. Cox, Penelo, N. C., wants prices on saw-mill complete.

Scales.—A. M. Cristoffanini, via Garibaldi 18, Genoa, Italy, wants prices f. o. b. Genoa on scales for weighing cars of the capacity of 50,000 ky., with platform 5½ meters; one scale "De Courville," with capacity of 5000 ky., to show the weights by ten thousands. Send fullest possible details in first letter.

Sewerage.—Sealed proposals will be received by the Sewerage Commission, Havre de Grace, Md., until December 1 for furnishing all materials and doing all work necessary for complete construction of about three and one-third miles of pipe sewers from 6 to 30 inches in diameter with Y branches, manholes and flush tanks complete. Specifications, maps, form of proposals, etc., may be seen at office of C. C. Pusey, secretary Sewerage Commission, Havre de Grace, or at office of Williams & Whitman, 902 Whitehall Building, New York, N. Y. Certified check equal to 5 per cent. of amount of bid must accompany each proposal. Usual rights reserved.

Sewing Machines.—Societe Coloniale Indo-Belge, Antwerp, Belgium, wants addresses of manufacturers of cheap sewing machines.

Shingle Machine.—F. Toler Jones, Box 565, Charleston, S. C., is in the market for an up-to-date shingle machine for making cypress shingles.

Soda Fountain.—Finney & Swann, Wills Point, Texas, will be in the market for soda fountain.

Stave Machinery.—Crossville Lumber Co., Crossville, Tenn., wants prices on stave machinery.

Steel Sprocket and Castings.—Isthmian Canal Commission, Washington, D. C., will open bids November 19 for excavator sprocket casting pattern as per blueprint and 60 steel castings for same, also 400 steel links weighing 1460 pounds, 20 steel blocks at 1270 pounds, 400 steel pins (cold-rolled) at 764 pounds, 4800 steel links at 5400 pounds, 1200 steel pins (cold-rolled) at 2020 pounds, 1200 one-inch steel-pipe thimbles marked at 600 pounds, 1200 steel washers at 200 pounds, etc., for use in connection with repairs and maintenance of excavator and link propelling chain at Culebra. Usual rights reserved. For information address S. E. Redfern, chief clerk.

Store Fixtures.—Finney & Swann, Wills Point, Texas, will be in the market for drug fixtures.

Tanks.—Hilton J. Doggett, Box 121 Baltimore, Md., is in the market for two rectangular iron tanks, open, 10x6x10; two oil storage tanks, 6000 to 12,000 gallons; two rectangular open wooden tanks, 10x4x4.

Telephone Equipment.—Sweet Springs Telephone Co., Sweet Springs, Mo., wants prices on telephones and telephone poles.

Water-works.—Graceville Electric Light & Water Co., Graceville, Fla., wants prices on machinery and equipment for water-works for town of 1000 people. (See "Electric-light Plant.")

Water-works.—Water-works Committee, Marion, N. C., will open bids November 25 for furnishing materials and constructing a system of water-works, to include steam plant, pumps, reservoir and four miles of pipe and appurtenances. Plans and specifications can be seen or obtained after November 8 at office of J. MacNaughton, chairman committee, or R. L. Greenlee, engineer, Marion, N. C.

Water-works Equipment.—City of Washington, Ga., will require for its water-works system two 60-horse-power boilers, one comp. pump 750,000 gallons per diem, one standpipe 20 feet diameter by 520 feet, 1,000,000-gallon reservoir, three miles pipe laying; N. Wilson Davis, engineer in charge, Harrisonburg, Va.

Water-works Equipment.—City of Salisbury, Mo., T. A. LaGrass, mayor, will be in the market for boilers, dynamos, etc.

Well Drilling.—Xavier A. Kramer & Co., engineers, Magnolia, Miss., will receive bids for the drilling of well in connection with water-works.

Well-drilling Equipment.—C. Hawthorne Boynton, president and general manager Oil & Gas Development Co., Apache, O. T., wants prices on well-drilling machinery and supplies.

Well-drilling Equipment.—Chas. T. Lehman, 1901-1908 Powell avenue, Birmingham, Ala., desires complete description, with net price to dealers, on new well-drilling outfit complete, operated by gasoline engine, for drilling six-inch holes 250 feet deep.

Windmills.—S. F. Perkins, Manatee, Fla., is in the market for windmills. State lowest prices to dealers and freight rate from factory to Manatee, Fla.

MEXICO.

Cattle Ranch.—The Carrizos Hacienda Corporation has been organized with a capital stock of $5,000,000 (gold), purchased 200,000 acres of land and will conduct an extensive cattle ranch. Carlos Coghlan is president; S. E. Cross, secretary, both of San Luis Potosi, S. L. P., and F. E. Root of Chicago, assistant manager.

Gold and Silver Mines.—Daniel B. Nichols of Hostotipaquillo, Jalisco, has filed claims to gold-silver lands for development.

Gold Mines.—A. J. Nickel, J. K. P. House, C. P. Palmer and associates of Shawnee, O. T., have purchased and will develop with modern machinery the Fronteziza mines near Monterey, New Leon.

Gold Mines.—The Black Mountain Mining Co. has been organized with a capital stock of $2,500,000 for the purpose of developing gold mines. W. Z. Stewart of the General Paper Co., Chicago, Ill., is president; E. D. Brigham of the Chicago & Northwestern Railroad, Chicago, secretary, and S. J. Sensenbrenner of the Kimberly & Clark Co., Neenah, Wis., vice-president.

Gold-Silver Mines.—Meleslo Pena and Francisco Ruiz of Navidad, New Leon, have filed claims to silver-lead properties which they propose developing.

Harbor Improvements.—A commission of engineers, Natividad Gonzalez, chief, City of Mexico, is preparing plans for harbor improvements at Guaymas, about $5,000,000 to be expended by the government.

Hotel.—Gardiner H. Shaw of San Francisco, Cal., representing capitalists of his city, has stated that his associates contemplate building a $1,000,000 hotel in Mexico. He is now registered at the Sanz Hotel, City of Mexico.

Lead-Silver Mines.—The Compania Minera de Zola, S. A., has been organized at Parral, Chi., with capital stock of $100,000 (Mexican) to acquire and develop proven lead-silver mines, known as the Zola claims. W. T. Swoyer is president; Jose Ma. Guevara, vice-president, and E. Van Dreveldt, secretary.

Manufacturers' Agents.—The Compania Proveedora de Articulos Extranjeros, S. A., City of Mexico, has been organized, with capital stock of $30,000, to import manufactures. M. Lomeli is president, and Miguel Vazquez, manager.

Mineral Lands.—Eufracio Landeros of Tequila, Jalisco, has filed claims to mineral lands which he proposes developing.

Mining.—Henry Bollweg of Mascota, Jalisco, has filed claims to mining properties for development.

Mining Properties.—Pablo Isaac and S. P. Grasse of Ameca, Jalisco, have filed claims to gold, silver and copper deposits which they propose mining.

Rubber Factory.—The La Anglo-Mexicana, S. A., represented by Lic. Carlos Aguirre, Jimulco, Coahuila, will expend $200,000 to build an additional plant for manufacturing rubber from the guayule plant.

Silver-Lead Mines.—Francisco Oliver of Fresnillo, Zacatecas, has filed claims to silver-lead mines which he proposes to develop.

Silver-lead Mines.—Frank E. King of Sombrerete, Zacatecas, has filed claim to silver-lead veins which he proposes to mine.

Theater.—Juan Boarri, City of Mexico, is the architect preparing plans and specifications for National Theater building which the government proposes erecting at a cost of $3,000,000.

Water System.—The Tampico Electric Light Co., Tampico, Mexico, will probably arrange for the installation of plant to supply water or purify present water for fur-

nishing its electric-light plant with the necessary supply.

Railways.

Steam Railroad.—The Mexican International Railroad is locating its line between Durango and Mazatlan, having about 200 kilometers of heavy work on hand. W. S. Martin is general manager at Ciudad Porfirio Diaz, Mexico.

INDUSTRIAL NEWS OF INTEREST

Another Ball-Engine Contract.

The Ball Engine Co., Erie, Pa., has received an order for a 1000-horse-power horizontal cross-compound Corliss engine for the Altoona shops of the Pennsylvania Railroad.

Obermayer Awarded Prizes.

The S. Obermayer Company of Cincinnati, Ohio, manufacturer of foundry facings and foundry supplies, has been awarded the highest award and gold medal at the St. Louis Exposition on plumbago, foundry facings and foundry supplies of all kinds.

A Factory Site Available.

Any manufacturers who may be seeking a site to establish plant are invited to write H. P. Townley of Terre Haute, Ind., for particulars regarding the manufacturing buildings he offers for sale. The property offered is near Terre Haute, on the Pennsylvania Railroad, and can be obtained at a low figure.

Golden Plant to Enlarge.

Increasing demands on the facilities of the Golden Foundry & Machine Co. of Columbus, Ga., have made it necessary for that company to enlarge its plant. About $15,000 will be expended for the erection of another building and the installation of new machinery to better both the foundry and machine departments.

Clegg Heating-Plant Contract.

Among recent important heating-plant contracts awarded in the South was that for the equipment of the Deaf and Dumb Institute at Jackson, Miss. This contract went to Messrs. F. A. Clegg & Co., Inc., Louisville, Ky., specialists in steam, water and fan heating and ventilating, power plants, engines, boilers, pumps, etc.

For Southern Electric Plant.

A. A. Carlisle of the Wesco Supply Co., St. Louis, Mo., has sold a complete electrical installation for the electric-light plant in Amory, Miss., consisting of 150-kilowatt Triumph generator, Hardie-Tynes Corliss engine and boilers, Adams-Bagnall arc lamps, Peerless incandescent lamps, and the necessary material for installing the plant.

Want Southern Timber Lands?

Manufacturers or investors who may be in need of Southern timber lands can address Messrs. Beacham & Shackelton, West Building, Jacksonville, Fla. This firm offers for sale 100,000,000 feet of cypress and 100,000,000 feet of pine in South Georgia, and 30,000 acres of yellow pine in Manatee county, Florida. Particulars will be sent to applicants.

A Special Business Opportunity.

A complete scrap-iron yard located near Philadelphia is offered for sale by the owners. This is a good opportunity for active men. The business has been very profitable. The plant includes main building 60x220 feet, blacksmith shop, heavy shears, steam hoist and drop, stables, etc. Full particulars can be obtained by addressing "Scrap," care the Manufacturers' Record.

From Nine-Ounce to 150-Ton Scales.

The comprehensive character of the scales built by the Buffalo (N. Y.) Scale Co. is evident in the statement that scales from a nine-ounce postal to a 150-ton railroad track scale are built at the works. This company is supplying a most exacting trade with weighing machinery, and is prepared to figure on any buyers' requirements, whether large or small. Over 600 sizes and styles are regularly made.

The Roberts & Schaefer Co.

The Roberts & Schaefer Company, consulting and contracting engineer for complete coal-mining plants and coal washeries, has acquired and will continue the business of the Stewart Washer Co. of Birmingham, Ala. Its main offices will remain in the Old Colony Building, 1275, Chicago, with branch office in First National Bank Building, Birmingham. Ernest Prochaska, M. E., is engineer in charge at Birmingham.

Improved Liquid for Hydraulic Jacks

Hydraulic jacks are frequently much injured by the use of impure liquids. The cylinder and ram are corroded, the leather packings destroyed, etc. In order to meet the difficulties in this regard there has been prepared a new and improved non-corrosive liquid for hydraulic jacks. It is called "Jackohol," and manufactured by the Watson-Stillman Company, 204 East 43d street, New York. Write for leaflet of details.

A Model Electric Plant.

The new isolated plant installed in the Twenty-Third Regiment Armory, Brooklyn, N. Y., will contain two 75-kilowatt Northern generators direct connected to Harrisburg engines operating at 275 R. P. M. It will also have a 35-kilowatt 600 R. P. M. Northern generator belted to a Nash gas engine. Needless to say, the Northern machinery mentioned is that which is produced by the Northern Electrical Manufacturing Co. of Madison, Wis.

Some Woodward Governor Orders.

Continued and increasing sales is the report that comes from the Woodward Governor Co. of Rockford, Ill., manufacturer of water-wheel governors. Over 1200 Woodward governors have been sold on their merits. The latest types combine the highest perfection in design, construction and accuracy of regulation. Twenty-four of one type have been shipped to Italy this year and 14 to France. This is evidence that the Woodward water-wheel governors are widely known.

Highest Awards to C. W. Hunt Co.

Among the prominent manufacturers awarded highest prizes for exhibits at the St. Louis Exposition is the C. W. Hunt Co. of West New Brighton, N. Y. This company received highest awards for two of its three exhibits, the third not entered. The Huat Industrial Railway received the gold medal for narrow-gauge railways, and the electric storage battery locomotive built by the company received the silver medal, being the highest award for this type of locomotive.

Steam Shovels for Panama Canal.

From many quarters comes news in reference to the government's preparations for the construction of the Panama canal. Contract for steam shovels to be used was awarded last week. It was given the Bucyrus Company, H. P. Eells, president, Cleveland, Ohio. This makes a total of 14 shovels, aggregating $142,550, all that will be needed for the next year. The Bucyrus Company has also sold one of its new design 70-ton wrecking cranes to the Norfolk & Western Railroad for immediate delivery.

Awards to E. W. Bliss Company.

One of the most comprehensive exhibits at the St. Louis Exposition was that of the E. W. Bliss Company of Brooklyn, N. Y., manufacturer of presses, dies and special machinery. The company has been informed that it has been awarded the grand prize and a gold medal for tools and machines exhibited, the awards being granted for superiority of workmanship, smoothness of action, ingenuity displayed in design and highest quality of product. The E. W. Bliss Company may well feel complimented at this decision of the international jury.

Arthur Koppel Supplying Germany.

Ernst Wiener of Arthur Koppel, 66 and 68 Broad street, New York, has returned from a three months' trip to Europe. He reports that general business conditions in Germany are very good. While abroad he made arrangements which will enable him in future to furnish any of the standard styles of railway materials made by his firm from a stock kept in this country. He also perfected a system whereby orders which call for special manufacture can be shipped promptly. In this way such difficulties as his firm has had in the past from delays in filling orders will be entirely obviated.

Pettyjohn's Hollow Concrete Block Machine.

There can be no doubt but that the hollow concrete block will always be one of the most universally-used materials for building purposes. Many plants for producing blocks of this character have been established, and more are being built every day. It is of interest that one of the successful machines for manufacturing these hollow blocks is Pettyjohn's Hollow Concrete Building Block Machine. This machine is different from others offered for the same purpose. The Pettyjohn method moves the machine, not the block. This is said to save a great deal of labor and avoid all damage or loss by cracks or breakage, which has been a difficulty frequently met with. Messrs. Pettyjohn Bros., manufacturers of the machine, are desirous of sending the facts concerning their apparatus to present and prospective brick manufacturers and makers of building materials. They can be addressed at their plant, 1300 to 1326 North 1st street, Terre Haute, Ind.

Gold Medal for Ruberoid Roofing.

The Standard Paint Co., 100 William street, New York, sole manufacturer of Ruberoid Roofing, has again been awarded the gold medal for the latter material—this time at the Louisiana Purchase Exposition, St. Louis. It has also been awarded the gold medal for its roof paints and preserving paints, as well as for its building and insulating papers. Ruberoid Roofing has received the medal of highest award at all the principal expositions of the world, including Chicago, Paris, Buffalo, Omaha, Brussels, Turin, Charleston, St. Petersburg, Stettin, Grasse, Coolgardie, Dusseldorf, American Institute (New York) and others.

Articles Made of Lava.

Lava has been in use many years. It is the material employed in the manufacture of articles in such popular use as gas tips and acetylene burners, and is largely used and in high favor with electrical and general manufacturers. The first attempt to enlighten people as to the real nature of lava and its method of manufacture is presented in a current booklet. Those who have examined the book are enthusiastic over the possibilities of this fire and acid-resisting insulating material, which is adaptable to almost any form. It is only necessary for people to learn what can be done with the material for them to find uses which the lava maker cannot suggest. The American Lava Co. of Chattanooga, Tenn., will send a copy of the booklet to inquirers.

Important Heating and Ventilating Installation.

About 133,000 feet (over 25 miles) of one-inch steam pipe will be used in the hot-blast heating and tempering coils to be installed in the new Wanamaker Building in Philadelphia. This pipe is being manufactured into 111 "ABC" heater sections, varying in capacity from 3500 to 56,000 feet of heating surface each. In connection with these heaters and in other parts of the building 28 "ABC" fans will be used, the largest of these having a housing 220 inches high and the smallest 30 inches. The completed apparatus, which is now being constructed in the American Blower Co.'s factory at Detroit, Mich., will make a 19-carload shipment. "ABC" apparatus is also to be installed in the New York Wanamaker Building. Some 44,000 feet of one inch will be used in the heaters, and seven large fans will ventilate the building.

Westinghouse Companies at St. Louis. Notable Achievement in Awards.

Westinghouse products are known all over the world. They are used in nearly every branch of industry, and the name "Westinghouse" is almost a synonym for "the best in electrical and mechanical equipment." The Westinghouse Companies have had a large exhibit at the exposition in St. Louis, and it is announced that the international jury has awarded the companies prizes that form probably the longest and most comprehensive list of highest honors ever received by associated interests at any such exhibition. The awards are as follows: Special award in the department of machinery for "the best, most complete and most attractive installation." Twelve Grand Prizes—To the Westinghouse Electric & Manufacturing Co., for "alternating-current generators and motors, alternating-current turbo-generator installation, static transformers and rotary converters;" to the Westinghouse Electric & Manufacturing Co., for "direct-current generators and motors;" to the Westinghouse Electric & Manufacturing Co., for "electric railway motors, alternating current and direct current, and control systems for single and multiple unit operation and for mining and industrial locomotives;" to the Westinghouse Machine Co., for "horizontal gas engines and steam turbines;" to the Westinghouse Airbrake Co., for "airbrakes and friction-draft gears;" to the Westinghouse Traction Brake Co., for "brakes for electric cars;" to the American Brake Co., for "driver brakes;" to the Westinghouse Automatic Air & Steam Coupler Co., for "air and steam couplers;" to the Westinghouse Brake Co., Limited, London, England, for "airbrakes and accessories;" to the Westinghouse Company, Limited, of St. Petersburg, Russia, for "airbrakes and accessories;" to the Union Switch & Signal Co., for "signal system;" to the Cooper-Hewitt Electric Co., for "the development of the mercury vapor arc lamp." Eight Gold Medals—To the Westinghouse Electric & Manufacturing Co., for "complete switchboards and controlling apparatus, and the application of electric motors for mechanical purposes;" to the Westinghouse Electric & Manufacturing Co., for "alternating-current, direct-current and Bremer arc lamps and arc lighting systems;" to the Westinghouse Electric & Manufacturing Co., for "electric measuring instruments;" to the Nernst Lamp Co., for "Nernst lamps;" to the Cooper-Hewitt Electric Co., for "vapor lamps for photo-engraving;" to the Pittsburg Meter Co., for "water and gas meters;" to the Westinghouse Electric & Manufacturing Co., for "industrial betterment work;" to the Westinghouse Airbrake Co., for 'the housing of the working classes." Four Silver Medals—To the Westinghouse Electric & Manufacturing Co., for "switches, fuses and wiring appliances;" to the Sawyer-Man Electric Co., for "incandescent lamps;" to the Bryant Electric Co., for "electric-light fittings;" to the Societe Anonyme Westinghouse, Havre, France, for "gasoline automobiles." One Bronze Medal—To the Perkins Electric Switch Manufacturing Co., for "electric switches."

TRADE LITERATURE.

Graphite for the Motor.

"Graphite for the Motor" is a booklet giving some account of many great benefits derived from the use of lubricating graphite on motors, together with descriptions of certain graphite lubricants of the Joseph Dixon Crucible Co., Jersey City, N. J. Send for a copy.

Reliability, Rapidity and "Rand."

Vote for "Rand" and the platform of economy is the advice given in one of the banners flung to the breeze in these campaign times. This banner refers briefly to the rapidity, reliability, economy and efficiency of the drills, air compressors, rock drills, pneumatic tools, etc., made by the Rand Drill Co., 128 Broadway, New York.

The Gregory Bargain Sheet.

Buyers of electrical equipment and all kinds of electrical supplies will find interesting data in the Bargain Sheet for November issued by the Gregory Electric Co. of 54 South Clinton street, Chicago. This little publication presents prices and details regarding a number of dynamos, motors, transformers, meters, arc lamps, etc., in stock by the company and for sale at the lowest possible prices. The machinery listed includes the products of the best-known works in the United States, and is all offered ready for operation, in good working condition. The Gregory Electric Co. also rewinds armatures, refills commutators, rebuilds machines, etc., and offers those in the electrical field the highest grade of material and workmanship.

Catalogue of Standard Gears.

Manufacturers who have need for gears in their work will find one of the most complete catalogues issued in that of the Boston Gear Works, Frank Burgess, proprietor, Purchase and Pearl streets, Boston, Mass. This company manufactures bevels, spurs, internals and racks, with teeth planed theoretically correct, universal joints with solid ball, dustproof and oil-retaining; also spirals and helical spurs for accurate and smooth-running or high-speed movements, especially adapted for automobiles and other high-grade machinery. The Boston Gear Works' catalogue "E" presents many tables, illustrations, facts and figures regarding its complete line. This company recently added to its plant at considerable expense, and is now operating over 100 machines, including more than 30 special automatic machines and many expensive testing machines, and is prepared to furnish its cut-gears with a guarantee of accuracy and cut to correct pitch diameters, so as to be interchangeable for shaft-center distances. Send for a copy of the book showing specialties for 1905.

To Carload Purchasers of Coal.

An open letter to carload purchasers of coal contains some interesting facts for their attention. It refers especially to the troubles buyers have because of poorly loaded coal and of shortages in weight caused largely by waste and stealth en route. In order that coal may be loaded into box cars and thus reach its destination in the best possible condition and in full weight, there has been devised an equipment that should have the investigation of all who have not become acquainted with its features. This device is the Ottumwa Box Car Loader, now in use to the great satisfaction of those who have adopted it. The loader is no coal-throwing machine which damages the coal, but is a modern invention which handles coal absolutely without breakage. It will carry coal into the ends of the car, equally distributing the small and large lumps throughout the length of the car, overcoming the objections

so common with the hand-loaded coal—large lumps at end of car and small lumps and slack between the doors. The Ottumwa Box Car Loader Co. of Ottumwa, Iowa, manufactures the Ottumwa loader, and it issues the open letter above mentioned. Write for full particulars. The company has a Chicago branch office in the Old Colony Building, Room 1225.

McMyler Hoisting and Conveying Machinery.

Industrial progress is much indebted to modern hoisting and conveying machinery for the facilitation of operations in numerous avenues of activity. Hardly an industry thrives or a manufactory of any size exists but that hoisting or conveying machinery or both enters into their economical conduct. In this connection it is desired to call attention to the McMyler Manufacturing Co. of Cleveland, Ohio, designer and builder of hoisting and conveying machinery for 22 years. This company builds revolving cranes, coal conveyors, ore conveyors, coal-storage plants, car-dumping machines, clam-shell buckets, hoisting engines, haulage engines, slag-handling machinery, electric conveyors, turnover and scoop buckets, etc. Revolving cranes have been the McMyler specialty. In issuing its illustrated book of particulars the McMyler Manufacturing Co. has presented to those who are interested a publication that thoroughly covers the hoisting and conveying field. The McMyler machines and equipments are shown, many of them, and that any want in the industrial field for machinery of this character can be filled is clearly indicated. Many of the most noted corporations and firms in the United States are using McMyler equipments and individual machines. There are McMyler offices at 176 Federal street, Boston; in Farmers' Bank Building, Pittsburg; in Mining Exchange Building, Denver, and at 34-35 Cock Lane, Snow Hill, London. Correspondence to the Cleveland offices will receive immediate attention.

Improved Portland Cement Block Machines—Hydraulic Portland Rock Co.'s Designs.

The manufacture of cement blocks for building purposes is an industry that is growing steadily. These blocks have found their permanent place in the building-material world and for various other avenues into which cement construction enters. To design and build the machinery for producing these cement blocks has engaged the attention of some of the best-known American inventors and machinery constructors. Among these is the Hydraulic Portland Rock Co. of Cleveland, Ohio. This company designed its machines to overcome imperfections in finish and make possible Portland cement work that would be mechanically true, artistically correct, uniform in color and density, and possess a finished appearance that will satisfy the requirements of the building trade, and exceedingly well has the company succeeded in accomplishing this purpose. Any size, shape or design, hollow or solid, can be made with equal facility on the machine. Both hand-power and hydraulic concrete machines are made by the Hydraulic Portland Rock Co. There are many special points in connection with the company's machines that will appeal to the experienced manufacturer, contractor, builder and engineer. These are fully set forth and explained in the company's illustrated publication, which is now being distributed. The numerous kinds of buildings and other work which the product of the Hydraulic Company's machines is adapted to practically covers the entire field of construction. Write for further particulars.

Hydraulic Turbines and Governors.

The earlier forms of water-wheels were small, crude in form and easily constructed, but from time to time they have been improved and enlarged until they reached their present state of perfection. In Switzerland hydraulic engineers have had to contend with every variety of water-power from streams of copious flow, but trifling falls, to tiny mountain rivulets, which rivaled larger streams in power possibilities because of the great heights from which they came. Swiss engineers have therefore designed water-wheels requiring economical and effective units of many capacities and meeting many different conditions. Special impetus was given water-wheel development by the introduction of electrical transmission, which made it possible to transmit the power great distances for distribution and use. Messrs. Escher, Wyss & Co. of Zurich, Switzerland, are probably the most prominent builders of turbines in the world. Their wheels have proven their superiority by years of actual service and under the most arduous conditions. The great water-driven electric plant at Niagara Falls and at Shawinigan in Canada are using Escher-Wyss turbines, aggregating 175,000 horse-power. An important branch of water-wheel development has been the perfection of hydraulic governors—a most essential part of water-power equipments. In connection with these facts it is of much interest to note that the Allis-Chalmers Company of Chicago is the sole licensee in America for the sale and manufacture of the world-famous turbines, governors and other hydraulic machinery of Messrs. Escher, Wyss & Co. The Allis-Chalmers Company is about to issue a publication regarding that machinery. An examination of an advance copy shows that the subject has been covered sufficiently to indicate to engineers and manufacturers what has been accomplished by the use of Escher-Wyss machinery and the importance of investigating this make of equipment before awarding contracts for similar apparatus. Photographic views are presented of scenes in some of the world's greatest power plants and the machinery used therein, together with diagrams showing results of tests, etc. Copies of "Hydraulic Turbines and Governors" will be distributed as rapidly as they come from the press by the Allis-Chalmers Company to constructing engineers, contractors for mechanical equipment, mill men, manufacturers and others who are interested in the latest developments for utilizing water-power.

Lumber Notes.

Turpentine operators of Polk county, Florida, have formed an association for the better control of labor.

A tentative shipment of oak, ash and hickory will shortly be made from Port Arthur, Texas, to Rotterdam.

Two carloads of cedar logs were shipped last week from Ewells, Tenn., to Paris, France, by way of Pensacola.

During the past month the wheelbarrow factory of Chattanooga, Tenn., has taken nearly 100,000 feet of lumber from one Gadsden (Ala.) company.

It is expected that a large part of the lumber for Panama contracted for by a Baltimore firm will be secured at Savannah and shipped from there.

The Continental Lumber Co. of Houston, Texas, which has secured from the government a contract for 500,000 feet of lumber for use in the construction of the Panama canal, is endeavoring to secure another contract for 1,000,000 or 1,500,000 feet of pine and cypress.

Lumbermen of North Memphis will endeavor to induce the water commissioners of Memphis to put in a 12-inch water main from the city limits through the lumber districts, a distance of about one mile. The companies in the North Memphis district pay about $100,000 a week in wages during the busy season.

The United States Geological Survey has arranged for a special investigation of the advantages of Rockingham, Rockbridge and Augusta counties in the Shenandoah valley of Virginia for the cement industry.

Lion & Co. of San Paulo and Santos, Brazil, write the Manufacturers' Record that they are interested in importing hardware, agricultural implements and sanitary goods from the United States.

Under the auspices of the Commercial and Industrial Association $5000 will be raised for the purpose of advertising the advantages of Montgomery, Ala.

The Herron Pump & Foundry Co. of Chattanooga, Tenn., has been given a contract for valves and hydrants for the Panama canal construction.

The National Association of Agricultural Implement and Vehicle Manufacturers will meet at Chattanooga, Tenn., November 16, 17 and 18.

The value of Texas fish products last year was $291,753 and of oysters $196,094. The value of property used in the fisheries is $998,750.

THIRD ANNUAL REPORT
OF THE
LOUISIANA & ARKANSAS RAILWAY COMPANY,
YEAR ENDED JUNE 30, 1904.

Texarkana, Ark., October 17, 1904.

To the Stockholders and Bondholders of the Louisiana & Arkansas Railway Co.:

Extremely gratifying results attended the operation of the Louisiana & Arkansas Railway during the fiscal year that ended June 30, 1904. Owing to the continued development of the tributary country and the sustained prosperity of its principal industries, the Company's revenue in all departments increased handsomely. Gross earnings advanced from $4187 per mile in 1903 to $4768 per mile in 1904, the gain being 13.88 per cent., while net earnings rose from $1264 to $1467 per mile, or 16.06 per cent. The outlook for the coming year is correspondingly favorable.

No additions to the operated mileage were made during the year. The length of road operated was 147.77 miles, the same as on June 30, 1903, the average for the year 1903 having been 127.17 miles.

The extension from Winnfield to Jena, 39.43 miles, mentioned in the last annual report, was completed on December 31, 1903, but this extension will not be turned over by the Construction Department and formally opened for traffic before November 1, 1904. By that time it is hoped to complete the Little river bridge, work on which was delayed by high water during the spring and summer. This is the only steel bridge needed on the road. It is of substantial construction, with concrete piers, and has a span of 180 feet.

The extension to Jena gives your road an additional New Orleans connection, as at Georgetown it meets the Alexandria line of the St. Louis, Iron Mountain & Southern Railway. A joint passenger and freight station will be constructed at this point within 30 days and will greatly expedite the handling of through freight. Both the grade and the alignment of this extension are very good, the maximum grade being 1 per cent. and the maximum curvature two degrees. The right of way has been cleared throughout 100 feet in width. Yard room to the extent of 64.27 acres has been secured at Jena, and a commodious frame station has been erected.

During the year considerable work has been done in ballasting, improving cuts and fills and reducing grades, bringing the physical condition of the road to a high standard. Bridges have been maintained in good condition. Laying of heavy rails has been completed as far south as Sibley, giving a total laid with 75-pound rail of 82.43 miles, or 55.78 per cent. of the operated mileage. The remainder of the track is laid with 60-pound rail.

The country opened up by the Jena extension is an old-settled district. The ground is fertile and produces good crops of varied agricultural products, chiefly cotton and corn. Up to the present time it has had no railroad transportation. Many industrial enterprises are projected, and the Trout Creek Lumber Co.'s large plant is in process of construction near Jena. All of its traffic will be tributary to your road.

In addition to this mill, a lumber mill is being built near Cotton Valley. This will have a daily capacity of about 60,000 feet. During the year a hardwood mill was completed at Stamps and a pine mill near Winnfield. Several cotton gins have been erected along the line. A stave factory at Winnfield and a heading plant at Hope have also been built.

The extension from Stamps to Hope, finished a short time before the publication of the last report, has brought a large amount of business to your road. Considerable coal, hay and feed is received at this point from the St. Louis & San Francisco Railroad, whose line into Hope was completed during the year.

It is expected that the number of farmers along the line of the road will be considerably increased during the coming year and thereafter through the efforts of Mr. R. L. Pritchard, recently appointed Industrial Agent. Mr. Pritchard comes to the Louisiana & Arkansas Railway from the Central of Georgia Railway, where his work along similar lines was very successful. Much of the land tributary to the road is especially well suited to fruit-growing. The possibilities have been so well demonstrated that the citizens of Minden, on the line of your road, have during the past year induced 200 settlers from Alabama and Georgia to locate there. The complete satisfaction of these settlers warrants further efforts towards the upbuilding of the country tributary to the road.

CAPITAL STOCK.

During the year the outstanding capital stock was increased from $2,250,000 to $2,625,000. The total amount authorized is $7,000,000.

FUNDED DEBT.

Under the Company's first mortgage the total amount of bonds is limited to $7,000,000 and to an average of not over $20,000 per mile of completed road. At the beginning of the fiscal year the amount issued was $2,116,000, of which $1,500,000 had been issued for the general purposes of the Company and to satisfy its obligations, $408,000 for the extension from Stamps to Hope, and $208,000 for new rolling stock and improvements chargeable to capital.

Since the first of the year bonds to the amount of $608,000 have been issued as follows:

Article I, Section 3—For the construction of extensions and the acquisition of shops, depots, bridges and water stations	$316,000
Article I, Section 4—For the purchase of additional rolling stock and to provide for improvements and betterments	292,000
Total	$608,000

The bonds now outstanding amount to $2,724,000, the equivalent of $14,550 per mile of completed road.

IMPROVEMENTS AND ADDITIONS.

The total expenditures for additions and betterments charged to capital accounts during the year amounted to $234,599, as compared with $189,954 the previous year.

The greater part of the increase in expenditures for betterments was for reduction of grades and curvature and for ballasting. A total of 64½ miles of road has been ballasted with cement gravel from the Company's gravel beds near Stamps.

During the year new frame stations were built at Minden and at Jena, and at the latter point a water tank was erected. New machinery and tools to the value of $10,000 were bought for the car shops at Stamps.

The motive power of the road has been increased by the addition of seven new 70-ton locomotives. Through the installation of this powerful equipment, together with careful supervision, the average number of tons per freight train has risen from 174 to 213. Ten of the Company's freight cars were scrapped, and one boarding car and one wrecking car were added to the service list. No change is noted in the number of passenger cars.

MILEAGE.

Average miles operated in 1901, 91.8 miles; 1902, 97 miles; 1903, 127.17 miles; 1904, 147.77 miles; sidings, 28.50 miles. Rails in the 147.77 miles of line now in operation, 82.43 miles of 75-pound steel and 65.34 miles of 60-pound steel.

INCOME ACCOUNT.

The income accounts for the fiscal years 1903 and 1904 are as follows:

	1904.	1903.	Increase.	Increase, per cent.
Average miles operated	147.77	127.17	20.60	16.20
Gross earnings	$704,671	$532,534	$172,137	32.32
Operating expenses and taxes	487,795	371,706	116,089	31.23
Net earnings	$216,876	$160,828	$56,048	34.85
Other income	24,186	17,842	6,344	35.55
Total net income	$241,062	$178,670	$62,392	34.92
Fixed charges	125,605	70,027	55,578	79.37
Surplus	$115,457	$108,643	$6,814	6.27

The annual interest charge on the funded debt as it is now constituted amounts to $136,200, or 56.50 per cent. of the amount available in the past year for the payment of fixed charges. Gross earnings, operating expenses (including taxes, reserves for replacements and other deductions) and net earnings per mile of road for the last two years compare as follows:

	1904.	1903.	Increase.	Increase, per cent.
Average miles operated	147.77	127.17	20.60	16.20
Gross earnings	$4,768	$4,187	$581	13.88
Operating expenses and taxes	3,301	2,923	378	12.93
Net earnings	$1,467	$1,264	$203	16.06

The present interest charge is equivalent to $922 per mile of road operated, as compared with average revenue applicable to the payment of interest for the past three years of $1641 per mile.

Of particular interest, in that they indicate the growth of the country tributary to the line, are the increases in passenger, mail and express earnings. As compared with the previous year, passenger earnings gained 37½ per cent., and mail and express earnings 52 per cent. Freight earnings increased 30 per cent., and constituted 87.02 per cent. of the road's gross earnings, as compared with 88.18 per cent. the previous year. The gross receipts from other sources than lumber and logs maintained about the same relative position toward gross earnings that was shown the previous year—30 per cent.

Passenger earnings averaged 2.95 cents per passenger per mile, as compared with 2.85 cents in 1903, and freight earnings averaged 1.70 cents per ton per mile, as against 1.83 cents in 1903.

The passenger density increased 14.58 per cent., while the freight density increased 20.58 per cent. The average revenue freight haul rose from 34.68 miles to 39.57 miles, and the average distance traveled by passengers from 19.54 miles to 20.39 miles.

Comparative statistics of the freight and passenger traffic are given below:

PASSENGER TRAFFIC.

	1904.	1903.	Increase.	Increase, per cent.
Average miles operated	147.77	127.17	20.60	16.20
Number of passengers carried	108,898	85,356	23,542	27.58
Number of passengers carried one mile	2,220,813	1,668,048	552,765	33.14
Number of passengers carried one mile per mile of road	15,029	13,117	1,912	14.58
Total earnings from passengers	$65,403	$47,547	$17,856	37.55
Total earnings passenger department	$75,759	$54,376	$21,383	39.32

FREIGHT TRAFFIC.

	1904.	1903.	Increase.	Increase, per cent.
Average miles operated	147.77	127.17	20.60	16.20
Number of revenue tons carried	909,502	740,569	168,933	22.81
Number of revenue tons carried one mile	35,989,407	25,685,740	10,303,667	40.11
Number of revenue tons carried one mile per mile of road	243,550	201,980	41,570	20.58
Total earnings from freight	$613,215	$469,588	$143,627	30.59

During the year a sufficient sum was set aside out of income to maintain fully the existing property. For maintenance of way and structures the amount disbursed was equivalent to $921 per mile of road operated, the same as in the previous year. For repairs and renewals of rolling stock the amount charged to operating expenses averaged $1039 per locomotive in 1903 and $784 in 1904; per passenger car $474 in 1903 and $253 in 1904, and per freight and work car $26 in 1903 and $16 in 1904. All of the equipment is in good condition. Of the increase of $113,000 in operating expenses, nearly one-half was due to enhanced cost of conducting transportation resulting from higher prices for fuel and labor. Larger expenditures incurred in maintaining freight cars also contributed to increased operating expenses.

REPLACEMENT RESERVE FUNDS.

Included in the charges for maintenance of way and equipment are certain amounts set aside for replacements. From the reserves so created renewals are made as necessary. In the year 1904 the amount set aside for replacement of ties was $20,784, for replacement of rails $10,638, and for replacement of equipment $34,084. The amounts standing to the credit of the reserve accounts on June 30, 1904, were as follows: Tie Reserve, $31,023; Rail Reserve, $35,064; Equipment Reserve, $54,994; Sundry Reserve, $5766.

TRANSPORTATION RESULTS.

The heavier engines acquired during the year have made possible more economical handling of freight. While the number of tons of revenue freight carried one mile increased 40.11 per cent., the revenue freight train mileage increased only 12.14 per cent. The average trainload of revenue freight rose from 164 to 205 tons, or 25 per cent. Company freight included, the average trainload amounted to 213 tons, as compared with 174 tons the previous year. Freight earnings per freight train mile averaged $3.49, as against $2.99 in 1903, an increase of 16 per cent.

Passenger department earnings increased 39 per cent. during the year, and the number of passengers carried one mile rose 33 per cent. Passenger department earnings constituted 10.75 per cent. of gross earnings, as compared with 10.21 per cent. the previous year. Individual receipts from passengers averaged 60.06 cents, as against 55.70 cents in 1903. Passenger department earnings per train mile averaged 64.62 cents, a decrease of 11.64 cents during the year.

In the Company's train statistics the mileage of mixed trains is added to freight and passenger mileage, three-fourths to the former and one-fourth to the latter. No helping engines are employed. The following tables show comparative results:

FREIGHT SERVICE.

	1904.	1903.	Increase.	Increase, per cent.
Average miles operated	147.77	127.17	20.60	16.20
*Revenue freight train mileage	175,830	156,789	19,041	12.14
Average revenue freight trainload, tons	205	164	41	25
Average cars per train	19.62	16.25	3.37	20.74
Freight earnings per revenue freight train mile	$3.488	$2.995	$0.493	16.46

*Includes three-fourths of mixed train mileage.

PASSENGER SERVICE.

	1904.	1903.	Decrease.	Decrease, per cent.
*Passenger train mileage	117,242	71,307	†45,935	†64.41
Average number passengers per train	18.94	23.39	4.45	19.02
Passenger department earnings per train mile, cents	64.62	76.26	11.64	15.26

*Includes one-fourth of mixed train mileage. †Increase.

The Company's books and accounts have been audited by certified public accountants, and their certificate appears below.

By order of the Board,

WM. BUCHANAN, President.

COMPARATIVE GENERAL BALANCE SHEET.

ASSETS.	June 30, 1904.	June 30, 1903.	Increase.	Decrease.
Cash on hand	$202,558 67	$324,589 46		$122,030 79
Cash in transit	11,479 80	6,763 66	$4,716 14	
Cash with financial agents	200 00	300 00		100 00
Due from agents and conductors	2,277 47	2,258 64	18 83	
Due from individuals and companies	62,085 51	58,436 54	3,648 97	
Unexpired insurance	1,878 89	1,402 66	476 23	
Total Working Assets	$280,480 34	$393,750 96		$113,270 62
Material and supplies	151,166 23	197,667 96		46,501 73
Cost of road	4,756,087 76	3,593,326 33	$1,162,761 43	
Cost of equipment	637,676 92	525,854 24	111,822 68	
Total Assets	$5,825,411 25	$4,710,599 49	$1,114,811 76	
LIABILITIES.				
Audited vouchers	$30,374 22	$55,246 43		$24,872 21
Unpaid wages	26,248 70	26,678 29		429 59
Due individuals and companies	11,392 94	9,415 99	$1,976 95	
Agents' drafts in transit	1,704 57	690 07	1,014 50	
Unpaid coupons	200 00	300 00		100 00
Accrued interest on bonds	45,400 00	35,266 65	10,133 35	
Accrued taxes	5,156 81	4,000 00	1,156 81	
Miscellaneous reserves	1,499 18	3,162 78		1,663 60
Due trustees of first mortgage	5,637 15	695 00	4,942 15	
Total Working Liabilities	$127,613 57	$135,455 21		$7,841 64
Miscellaneous reserves	126,758 17	102,112 99	$24,645 18	
Surplus	222,039 51	107,031 29	115,008 22	
Capital stock	2,625,000 00	2,250,000 00	375,000 00	
First Mortgage bonds	2,724,000 00	2,116,000 00	608,000 00	
Total Liabilities	$5,825,411 25	$4,710,599 49	$1,114,811 76	

NOTE.—Working assets have been used for permanent improvements and extensions to the value of $195,939.19, for which amount the Company has authority to reimburse its treasury through the issuance of bonds.

STATEMENT OF EARNINGS AND EXPENSES FISCAL YEARS ENDED JUNE 30, 1903, AND JUNE 30, 1904.

	1904.	1903.	Increase.	Per cent. of total earnings. 1904.	1903.
Average miles operated	147.77	127.17	30.60	.....	.....
Gross Earnings:					
Freight	$613,214 91	$469,587 99	$143,626 92	87.02	88.18
Passenger	65,403 39	47,546 76	17,856 63	9.28	8.93
Mail	5,877 95	4,318 07	1,559 88	0.83	0.81
Express	4,477 91	2,511 02	1,966 89	0.64	0.47
Miscellaneous	15,696 65	8,570 38	7,126 27	2.23	1.61
Total Gross Earnings	$704,670 81	$532,534 22	$172,136 59	100	100
*Operating Expenses:					
Maintenance of way and structures	$136,062 42	$117,138 65	$18,923 77	19.31	22
Maintenance of equipment	103,289 07	64,878 75	38,410 32	14.66	12.18
Conducting transportation	207,958 93	155,394 68	52,564 25	29.51	29.18
General expenses	30,994 19	27,445 57	3,548 62	4.40	5.15
Total Expenses	$478,304 61	$364,857 65	$113,446 96	67.88	68.51
Taxes	9,490 63	6,849 00	2,641 63	1.34	1.29
Total Expenses and Taxes	$487,795 24	$371,706 65	$116,088 59	69.22	69.80
Net Earnings	$216,875 57	$160,827 57	$56,048 00	30.78	30.20

*NOTE.—Operating expenses include charges for eventual replacement of equipment, rails and ties.

COMPARATIVE STATEMENT OF INCOME ACCOUNTS FOR FOUR YEARS ENDED JUNE 30.

	1904.	1903.	1902.	1901.
Average miles operated	147.77	127.17	97	91.80
Gross Earnings	$704,670 81	$532,534 22	$478,531 50	$316,745 80
Operating expenses	$478,304 61	$364,857 65	$291,798 37	$193,995 39
Taxes	9,490 63	6,849 00	3,776 50	4,274 96
Operating Expenses and Taxes	$487,795 24	$371,706 65	$295,574 87	$198,270 35
Net earnings	$216,875 57	$160,827 57	$182,956 63	$118,475 45
Other income	24,185 98	17,842 52	.....	.....
Total Net Income	$241,061 55	$178,670 09	$182,956 63	$118,475 45
Interest on funded debt	$123,164 18	$69,277 45	$31,500 00	$15,618 82
Other interest	402 87	749 34	1,501 14	.....
Other deductions	2,037 91	.....	.....	.....
Total Deductions	$125,604 96	$70,026 79	$33,001 14	$15,618 82
Surplus	$115,456 59	$108,643 30	$149,955 49	$102,856 63

STATEMENT OF PROFIT AND LOSS ACCOUNT, FISCAL YEAR ENDED JUNE 30, 1904.

CREDITS.

Balance July 1, 1903	$107,031 29
Surplus income for year ended June 30, 1904 (Schedule III, pamphlet report)	115,456 59
Total Credits	$222,487 88

DEBITS.

Sundry adjustments	448 37
Balance June 30, 1904, per Balance Sheet	$222,039 51

DESCRIPTION OF FUNDED DEBT.

First Mortgage Gold 5 Per Cent. Bonds. Date of issue, September 1, 1902. Date of maturity, September 1, 1927. Principal and interest payable in gold, free of all taxes. Interest March and September. Rate of interest 5 per cent. Secured by first lien on all of the property of the Company now owned or which may be acquired hereafter. Authorized, $7,000,000; outstanding June 30, 1904, $2,724,000, or $18,434 per mile of road operated; reserved for the construction or acquisition of a bridge across the Black river and a bridge across the Red river, $1,000,000; for extensions, equipment, improvements and betterments, $3,276,000.

The entire issue, but no part, will be subject to redemption at 110 and accrued interest on any interest day after September 1, 1907. Beginning with 1907, the bonds will be entitled to the benefit of a sinking fund of $55,000 per annum, to be used by the Trustee in the purchase of bonds at a price not to exceed 110 and accrued interest. Should it be impossible to purchase bonds at this rate, the sinking fund may be invested in securities in which savings banks at that time are authorized to invest according to the laws of New York, New Jersey, Massachusetts or Connecticut.

Coupon bonds in the denomination of $1000; may be registered either fully or as to principal only. Interest payable in New York at the office of Fisk & Robinson. Listed on the New York Stock Exchange.

Patterson, Teele & Dennis,
Certified Public Accountants,
Cable Address "Dignus." 30 Broad Street, New York.

New York, September 13, 1904.

To the Stockholders and Bondholders of the Louisiana & Arkansas Railway Co.:

We have made an examination of the books and accounts of the Louisiana & Arkansas Railway Co. for the fiscal year ending June 30, 1904, and hereby certify that the Balance Sheet and Income and Profit and Loss Accounts published herewith are in accordance with the books, and we have satisfied ourselves that they accurately set forth the results of the year's operation and the financial conditions as at June 30, 1904.

PATTERSON, TEELE & DENNIS,
Certified Public Accountants.

EIGHTH ANNUAL REPORT

OF THE

St. Louis & San Francisco Railroad Co.

The following is report of the operations and affairs of the lines constituting the St. Louis & San Francisco Railroad System (exclusive of the Chicago & Eastern Illinois Railroad) for the fiscal year ended June 30, 1904:

The mileage operated, and to which the statements and statistics in this report pertain, is as follows:

MILEAGE OPERATED.

By St. Louis & San Francisco Railroad Co.:	Main track.	Second track.	Side tracks and switches.
St. Louis & San Francisco R. R., Main Line and Branches	2,855.06	16.55	552.43
Kansas City, Ft. Scott & Memphis Ry., Main Line and Branches.	871.20	23.90	385.06
Kansas City, Memphis & Birmingham R. R., Main Line and Branches	285.66	.....	78.15
Total	4,011.92	40.45	1,015.64
By Other Companies in System Under Their Own Organizations:			
Ft. Worth & Rio Grande Railway	195.88	.....	27.46
Red River, Texas & Southern Railway	87.34	.....	17.46
Paris & Great Northern Railroad	16.94	.....	6.11
St. Louis, San Francisco & Texas Railway	15.84	.....	17.36
Blackwell, Enid & Texas Railway	12.75	.....	1.61
Oklahoma City & Texas Railway	8.68	.....	3.28
Birmingham Belt Railroad	.....	.....	17.69
Total at June 30, 1904	4,349.35	40.45	1,106.61
Total at June 30, 1903	3,938.17	29.16	907.87
Increase	411.18	11.29	198.74

The increase in the main track mileage during the fiscal year consisted of:

	Miles.
St. Louis & San Francisco Railroad:	
Ozark & Cherokee Central Railway:	
Fayetteville, Ark., to Okmulgee, I. T.	143.90
Sulphur Springs Railway:	
Scullin, I. T., to Sulphur, I. T.	8.72
St. Louis, San Francisco & New Orleans Railroad:	
Madill, I. T., to Ardmore, I. T.	24.60
Mead Junction to Platter, I. T.	9.24
Hope, Ark., to Ashdown, Ark.	32.97
Arkansas Valley & Western Railway:	
Red Fork, I. T., to Avard, O. T.	175.25
	394.68
Kansas City, Ft. Scott & Memphis Railway:	
Evadale, Ark., to Big Creek, Ark.	16.50
Total increase	411.18

or 10.4 per cent.

The average mileage operated during the year was 4216.87 miles, as against 3675.23 miles during the preceding year, being an increase of 541.64 miles, or 14.7 per cent.

For detailed statement of mileage owned and operated see pages 70, 71 and 72 of pamphlet report.

FINANCIAL.

Capital Stock.

There was no change in the Capital Stock of the Company during the fiscal year.

Funded Debt.

The Funded Debt, including Guaranteed Stock and Bonds of Auxiliary Companies, increased $14,771,708.71 during the fiscal year. The changes making up this increase were as follows:

St. Louis & San Francisco Railroad Co.

Additions:

$2,175,500 00 of St. L. & S. F. R. R. Refunding Mortgage 4 per cent. Bonds, of which
- $1,000,000 were for Improvement and New Equipment expenditures.
- 133,000 were for the purchase of the Stocks and Bonds of the Sulphur Springs Railway, 8.72 miles.
- 388,000 were on account of purchase of Stock and Bonds of Ft. W. & R. G. Ry.
- 86,000 were for additional expenditures made on account of R. R. T. & S. Ry.
- 553,000 were for additional expenditures made on account of the Oklahoma City & Western R. R. and Oklahoma City & Texas R. R.
- 15,500 were for a like amount of Underlying Lien Bonds redeemed.

2,880,000 00 of Ozark & Cherokee Central Ry. 1st Mortgage 5 per cent. Bonds issued for payment of 143.90 miles of road.

40,200 00 Guaranteed Preferred Stock St. L., S. F. & N. O. R. R. Co., being balance of a total issue of $1,000,000, of which $1,019,800 has been exchanged for and placed under this Company's 5-Year 4½ per cent. Gold Notes.

223,222 24 of St. L. & S. F. R. R. Co. New Orleans Extension Purchase Money Collateral Trust 4 per cent. Gold Bonds—total amount issued $6,487,000, of which $6,263,777.76 has been exchanged for and placed under this Company's 5-Year 4½ per cent. Gold Notes.

6,892,241 97 of 5-Year 4½ per cent. Gold Notes issued to take up outstanding Preferred Stock of the St. L., S. F. & N. O. R. R. Co. and New Orleans Extension Purchase Money Collateral Trust 4s.

4,646,769 50 of 2½-Year 5 per cent. Gold Notes issued to take up $3,580,000 Collateral Trust 4s (St. L., M. & S. E. R. R.) and to partly reimburse the treasury for advances made account construction of St. L., M. & S. E. R. R.

$16,857,933 71 Total.

Deductions:

$4,000 00 of St. L. & S. F. R. R. Co., Missouri & Western Division 6 per cent. Bonds redeemed.
6,000 00 of St. L. & S. F. R. R. Co. Trust Mortgage of 1880, 6 per cent. Bonds redeemed.
4,000 00 of Ft. Smith & Van Buren Bridge Co., 1st Mortgage 6 per cent. Bonds redeemed.
1,500 00 St. L. & S. F. R. R. Co., Northwestern Division 1st Mortgage 4 per cent. Bonds redeemed.
125 00 of St. L. & S. F. R. R. Co., Consol. 4 per cent. Scrip cancelled.
3,580,000 00 of Collateral Trust 4 per cent. Gold Notes (St. L., M. & S. E. R. R.) exchanged for 2½-Year 5 per cent. Gold Notes.

$3,595,625 00 Total.

$13,262,308 71 Net increase.

Leasehold Estate (the K. C., F. S. & M. Ry. Co.).

Additions:

$1,691,000 00 of K. C., F. S. & M. Ry. Refunding Mortgage 4 per cent. Bonds, of which
- $653,000 were for improvement expenditures made.
- 373,500 were for construction of Evadale Cut-off, 16.50 miles.
- 35,000 were for construction of New Home Coal Co. Spur, 3.56 miles.
- 629,500 were for $181,600 Underlying Bonds redeemed and for refunding purposes.

$1,691,000 00 Total.

Deductions:

$48,600 00 of K. C., F. S. & G. R. R. 1st Mortgage 7 per cent. Bonds redeemed.
33,000 00 of Ft. Scott Equipment Co. 1st Mortgage 6 per cent. Bonds redeemed.
100,000 00 of Ozark Equipment Co. 1st Mortgage 5 per cent. Bonds redeemed.

$181,600 00 Total.

$1,509,400 00 Net increase.

Auxiliary Companies.

Addition:

$173,000 00 of B. E. & T. Ry. Co. 1st Mortgage 4 per cent. Bonds issued in part payment of road, but owned by this Company and placed under the St. L. & S. F. R. R. Refunding Mortgage.

$14,771,708 71 Total net increase in System Funded Debt.

Bonds in Treasury.

The par amount of bonds held in the treasury as a current asset at June 30, 1903, was $4,705,736.27, and there were additions and deductions made during the fiscal year as follows:

Additions:

$1,000,000 00 of Refunding 4 per cent. Bonds issued for improvement and new equipment expenditures.
133,000 00 of Refunding 4 per cent. Bonds issued to cover the purchase price of the Stock and Bonds of the Sulphur Springs Railway.
388,000 00 of Refunding 4 per cent. Bonds issued to cover additional expenditures on account of purchase of Stock and Bonds of Ft. W. & R. G. Ry.
86,000 00 of Refunding 4 per cent. Bonds issued to cover additional expenditures on account of R. R. T. & S. Ry.
553,000 00 of Refunding 4 per cent. Bonds issued to cover additional expenditures on account of O. C. & W. R. R. and O. C. & T. R. R.
15,500 00 of Refunding 4 per cent. Bonds issued for a like amount of Underlying Bonds redeemed.
653,000 00 of K. C., F. S. & M. Ry. Co. Refunding 4 per cent. Bonds issued for improvement expenditures.
373,500 00 of K. C., F. S. & M. Ry. Co. Refunding 4 per cent. Bonds issued for payment of construction of Evadale Cut-off.
35,000 00 of K. C., F. S. & M. Ry. Co. Refunding 4 per cent. Bonds issued for construction of New Home Coal Co. Spur.
629,500 00 of K. C., F. S. & M. Ry. Co. Refunding 4 per cent. Bonds issued for Underlying Bonds redeemed and for refunding purposes.
2,880,000 00 of Ozark & Cherokee Central Ry. Co. 1st Mortgage 5 per cent. Bonds purchased.
999,999 99 of 5-Year 4½ per cent. Trust Notes received for advances to construction of St. L., S. F. & N. O. R. R.
376,000 00 of Collateral Trust 4 per cent. Gold Notes (St. L., M. & S. E. R. R.) purchased.
4,500,000 00 of Arkansas Valley & Western Ry. Co. 1st Mortgage 4 per cent. Bonds purchased.
184,750 00 of St. L., M. & S. E. R. R. Co. 1st Mortgage 4 per cent. Bonds received for advances account construction of St. L., M. & S. E. R. R.
2,902,127 07 of St. L., M. & S. E. R. R. Co. 5-Year 4½ per cent. Gold Bonds received for advances account construction of St. L., M. & S. E. R. R.
2,009,542 62 of St. L. & S. F. R. R. Co. 2½-Year 5 per cent. Gold Notes received for advances account construction of St. L., M. & S. E. R. R. and in exchange for Collateral Trust 4 per cent. Gold Notes.

$17,718,919 68 Total added during the year.

Deductions:

$6,390,000 00 of St. L. & S. F. R. R. Co. Refunding 4 per cent. Bonds sold.
1,901,000 00 of K. C., F. S. & M. Ry. Co. Refunding 4 per cent. Bonds sold.
500,000 00 of O. & C. C. Ry. Co. 1st Mortgage 5 per cent. Bonds sold.
428,077 27 of Collateral Trust 4 per cent. Gold Notes exchanged for 2½-Year 5 per cent. Notes.
232,250 00 of St. L., M. & S. E. R. R. Co. 1st Mortgage 4 per cent. Bonds exchanged for St. L., M. & S. E. R. R. Co. 5-Year 4½ per cent. Gold Notes.

$9,451,327 27 Total to deduct.

$8,267,592 41 Net par amount added during the year, making a total par amount of Bonds and Scrip in the treasury at June 30, 1904, of $12,973,328.68.

Equipment Notes.

During the fiscal year the following additional equipment notes were issued:

Series "C":	$262,000 00	Total issue $1,000,000, of which $738,000 were issued in previous fiscal year.
Series "F":	$1,624,000 00	dated July 1, 1903, and payable in quarterly instalments of $58,000 each.
American Car & Foundry Co. Equip. Notes:	$371,030 40	dated May 13, 1903, 120 notes of $3091.92 each, one note payable monthly on the 13th of each consecutive month after delivery.
Total issued	$2,257,030 40	

The Equipment Notes paid were as follows:

Blair & Co. Notes	$131,000 00
Series "B" Notes	124,000 00
Series "C" Notes	100,000 00
American Car & Foundry Co. Notes	149,352 84
Series "F" Notes	232,000 00
Total paid	$736,352 84

The net increase during the year in Equipment Notes issued and outstanding was $1,520,677.56.

NEW MILEAGE.

The new mileage completed and placed in operation during the year was as follows:

Sulphur Springs Railway.

This branch line extends from Scullin, I. T., to Sulphur, I. T., a distance of 8.72 miles. It was completed and placed in operation July 1, 1903, and for the cost of construction $133,000 of this Company's Refunding 4 Per Cent. Bonds were issued.

Ozark & Cherokee Central Railway.

This road was built by the Kenefick Construction Co., and extends from Fayetteville, Ark., to Okmulgee, I. T., a distance of 143.90 miles. The Construction Company received $2,880,000 of Ozark & Cherokee Central Railway Co.'s First Mortgage 5 Per Cent. Bonds and $2,880,000 of its capital stock in payment for construction of the line. This Company purchased all of the stock and bonds from the Kenefick Construction Co., and the road was taken over for operation by this Company at July 1, 1903.

St. Louis, San Francisco & New Orleans Railroad.

The western section of this line, between Madill, I. T., and Ardmore, I. T., 24.6 miles, was completed August 19, 1903; the "Platter Cut-off," between Mead Junction and Platter, I. T., 9.24 miles, was completed November 8, 1903, and the eastern section, between Hope and Ashdown, Ark., 32.97 miles, was completed January 1, 1904. The completed line extends from Hope, Ark., to Ardmore, I. T., a distance of 232.73 miles. At Hope, Ark., connection is made with the Louisiana & Arkansas Railroad and the St. L., I. M. & S. Ry., and at Ardmore with the Rock Island and Atchison Systems.

This Company issued its 5-Year 4½ Per Cent. Trust Notes, amounting to $7,125,000, to take up the guaranteed preferred stock of the St. Louis, San Francisco & New Orleans Railroad Co. and all of the Underlying Bonds, and to pay for additional construction expenditures.

ARKANSAS VALLEY & WESTERN RAILWAY.

This line extends from a point on this Company's main line near Red Fork, I. T., to Avard, O. T., a distance of 175.25 miles. The road was completed and placed in operation March 1, 1904. This Company purchased all of the capital stock, amounting to $4,500,000, and all of the First Mortgage 4 Per Cent. Bonds, amounting to $4,500,000.

KANSAS CITY, FORT SCOTT & MEMPHIS RAILWAY.

Evadale Cut-off.

In order to shorten the line between St. Louis and Memphis, a branch cut-off was built under the charter of the Kansas City, Fort Scott & Memphis Railway Co. between Evadale and Big Creek, Ark., a distance of 16.50 miles. It was completed and placed in operation May 7, 1904.

New Home Coal Co. Spur Track.

A spur track 3.56 miles long was completed February 19, 1904, from a point on the Kansas City, Fort Scott & Memphis Railway in Bates County, Missouri, to the mines of the New Home Coal Co.

ST. LOUIS, MEMPHIS & SOUTHEASTERN RAILROAD.

On June 1, 1904, the St. Louis, Memphis & Southeastern Railroad Co. acquired by deed the property of the St. Louis & Gulf Railway, then nearing completion, subject to a first mortgage, under which 4 per cent. bonds amounting to $5,852,000 had been issued and were outstanding; total mileage 246.20 miles. On same date the St. Louis, Memphis & Southeastern Railroad Co. executed a mortgage to the New York Security & Trust Co., Trustee, and issued thereunder its 5-Year 4½ Per Cent. Gold Notes to the amount of $16,000,000, guaranteed principal and interest by this Company. Thirteen million seven hundred and sixty-six thousand dollars of the total issue were set aside for the redemption of all the underlying bonds of the St. Louis & Gulf Railway Co. and the St. Louis, Memphis & Southeastern Railroad Co. at June 1, 1904, and the balance, $2,234,000, was applied to the repayment of money advanced for construction of roads.

As stated in last year's report, page 16, this Company owns all of the capital stock of the St. Louis, Memphis & Southeastern Railroad Co. and the St. Louis & Gulf Railway Co. The entire mileage (681.10 miles) was completed at June 30, 1904, and was turned over to this Company for operation as of July 1, 1904. Prior to July 1, 1904, the completed parts were operated for account of construction.

NEW ORLEANS TERMINAL CO.

On June 30, 1903, this Company had advanced $649,015.82 to the New Orleans Terminal Co. for the purchase of Terminal property in New Orleans. The Terminal Company executed a First Mortgage, dated July 1, 1903, on all of its property in New Orleans, including 16.85 miles of main line track and 12.53 miles of sidings, together with rolling stock, consisting of 4 locomotives, 47 box cars, 8 gondola cars, 12 flat cars and 1 tool car, and issued $3,000,000 of its First Mortgage 50-Year 4 Per Cent. Gold Bonds, guaranteed jointly by this Company and the Southern Railway Co. The bonds were sold, and this Company received reimbursement of all advances made.

The two guaranteeing Companies own all of the capital stock of the New Orleans Terminal Co. (one-half each).

STATEMENT OF ROLLING STOCK, SHOWING THE DIFFERENT CLASSES AS OF JUNE 30, 1904.

Description.	Owned June 30, 1903.	Changed, built and purchased.	Destroyed and changed.	Owned. June 30, 1904.
Locomotives	596	160	*24	731
Passenger Cars:				
Coaches:				
First Class	78	22	5	95
Second Class	70	5	4	71
Chair	55	6	..	61
Combination:				
Coach and Baggage	19	1	1	19
Coach and Mail	25	4	3	26
Coach, Mail and Baggage	7	...	..	7
Baggage, Mail and Express	22	...	3	19
Baggage and Express	65	6	3	68
Mail and Baggage	1	...	1	...
Mail	19	6	1	24
Official	8	1	..	9
Dining	2	...	..	2
Observation Cafe	7	1	..	8
Fruit (Passenger)	9	...	2	7
Total Passenger Cars	387	52	23	416
Freight Cars:				
Box	10,014	134	246	9,902
Stock	906	...	80	826
Coal	8,172	736	230	8,678
Flat	665	251	55	861
Caboose	308	19	10	317
Fruit (Freight)	169	...	7	162
Refrigerator	108	...	14	94
Furniture	727	...	9	718
Powder	...	3	..	3
Coke	...	68	..	68
Total Freight Cars	21,129	1,211	661	21,679
Miscellaneous Cars:				
Derrick	7	1	..	8
Pile Driver	6	1	..	7
Steam Shovel	4	1	..	5
Boarding	10	1	..	11
Water	8	...	..	8
Gas Tanks	2	2	..	4
Distributing	5	...	..	5
Tool	6	4	..	10
Service	2	...	..	2
Ballast	262	...	..	262
Cinder	223	...	11	212
Rail Loader	...	1	..	1
Steam Wrecker	4	1	1	4
Ditcher	3	2	..	5
Ballast Unloader	1	1	..	2
Total Miscellaneous Cars	543	15	12	546
Total Cars	22,059	1,278	696	22,641
Grand Total Engines and Cars	22,645	1,447	720	23,372

*Includes 12 K. C., F. S. & M. Ry. Engines, which were scrapped before road was leased to this Company.

TRAFFIC.

FREIGHT.

A comparison of tonnage handled during the fiscal year, with results for preceding year, is as follows:

	1904.	1903.	Increase.	Decrease.
Tonnage	11,114,417.1	10,049,931.3	1,064,485.8	
Ton Mileage	1,923,003,602	1,749,596,697	173,406,905	
Average Haul, Miles	173.01	174.09		1.08
Tonnage Density per Mile of Road	4,560.26	4,760.51		200.25
Average Rate per ton	$1.6894	$1.7313		$0.0419
Average Rate per Ton Mile	$0.00976	$0.00995		$0.00019
Load per Car, tons	15.84	15.27	.57	
Load per Car, including Company Freight, tons	18.11	17.34	.77	
Train Load, tons	200.43	195.01	5.42	
Train Load, including Company Freight, tons	229.18	221.39	7.79	
Freight Train Mileage	9,594,431	8,971,879	622,552	
Loaded Car Mileage	121,408,470	114,568,145	6,840,325	
Empty Car Mileage	60,891,406	57,919,552	2,971,854	

PASSENGER.

A comparison of the passenger business handled during the fiscal year, with results for preceding year, is as follows:

	1904.	1903.	Increase.	Decrease.
Number of Passengers	4,930,585	4,181,637	748,948	
Passengers Carried One Mile	254,484,036	214,314,007	40,170,029	
Average Miles per Passenger	51.61	51.25	0.36	
Average Rate per Passenger	$1.2133	$1.1682	$0.0451	
Average Rate per Passenger per Mile	$0.02351	$0.02279	$0.00072	
Number Through Passengers Carried	430,589	363,690	66,899	
Through Passengers Carried One Mile	8,896,462	68,843,533	10,052,929	
Number of Local Passengers Carried	4,499,996	3,817,947	682,049	
Local Passengers Carried One Mile	175,587,574	145,470,474	30,117,100	
Passenger Train Mileage	6,665,430	5,880,438	784,992	

Further details in respect to train and traffic statistics are given in Table I., page 51 of pamphlet report. On page 65 of pamphlet report, Table V, is given a condensed statement of Freight and Passenger statistics for the eight years ended June 30, 1904.

GENERAL REMARKS.

There has been a marked increase in immigration into the States and Territories tributary to the Company's Lines during the fiscal year, and there were erected during the year at various points along the lines of the System 269 new industrial plants, representing over $5,000,000 of invested capital and employing fully 6000 men.

The crops in the territory traversed by the System Lines are fully up to the average, so that the general outlook for future traffic is favorable.

There were excessive rainstorms and floods in Kansas, Indian Territory and Oklahoma during the months of May and June, which caused considerable damage to tracks and crops, as well as delayed somewhat the movements of trains. The extraordinary expenses incurred by reason of the floods were charged to a special account instead of to operating expenses, and which is shown separately in Income Account.

By reference to the statement of Income Account, page 5 of pamphlet report, it will be seen that the Company paid the regular quarterly dividends of 4 per cent. on its first and second preferred stocks during the fiscal year; also the guaranteed dividends on the Kansas City, Fort Scott & Memphis Railway preferred stock trust certificates, as well as on the Chicago & Eastern Illinois Railroad common and preferred stock trust certificates. After the payment of all charges and dividends, the surplus, amounting to $423,895.68, was transferred to the credit of Profit and Loss Account. For all other credits and charges made to Profit and Loss Account during the year reference is given to Table A, this report.

A consolidated Profit and Loss Account, Income Account and Balance Sheet, including the figures of the Chicago & Eastern Illinois Railroad Co., are given on pages 73 to 76, inclusive, of pamphlet report. They show the results of the operations of both properties for the fiscal year and their financial condition at the end thereof. This Company during the year acquired all the remaining outstanding shares of the Common Stock of the Chicago & Eastern Illinois Railroad Co., and issued against same its own Stock Trust Certificates.

As has been the custom in the past, the Board directed that Mr. Stephen Little make an examination of the accounts of the Company at the close of the fiscal year. His certificate appears on pages 23 and 24 of pamphlet report.

For all detailed information in respect to the results of operation for the year reference is made to the financial and statistical statements submitted herewith.

I desire to express my appreciation of the faithful and efficient services rendered by officers and employes during the year.

A. J. DAVIDSON, President.

A.

GENERAL PROFIT AND LOSS ACCOUNT, AND ADJUSTMENTS THEREIN, JUNE 30, 1903, TO JUNE 30, 1904.

	Dr.	Cr.
By Balance at credit, June 30, 1903		$3,909,226 39
" Surplus for the year ended June 30, 1904, as per Income Account		423,895 68
" Adjustment of Sinking Fund Accounts for year 1902		9,200 00
" Unpaid Vouchers and Pay-rolls written off		4,885 33
" Miscellaneous accounts closed out		756 52
" Net Earnings of operation of B. E. & S. W. R. R. received from the Bes Line Construction Co. for two months ended February 28, 1903		414 30
" Balance of Land Income Account, K. C., F. S. & M. Ry. at June 30, 1903		48,878 85
" Difference between discount on bonds sold and stock and bonds exchanged during the fiscal year ended June 30, 1904		15,119 26
To Instalment from Franchises and Property account, on account of difference between the cost of Underlying Bonds refunded and the proceeds of the Refunding Bonds sold and the commissions paid therefor	$250,000 00	
" Expenses engraving, recording and certifying bonds and stocks issued during the fiscal year and legal services in connection therewith	22,571 99	
" Taxes for the year 1903 on land in New Mexico and Arizona	9,734 88	
" Deficit in operation of the O. & C. C. Ry. at June 30, 1903	56,871 49	
" Amount paid for Franchises, Maps, etc., of Oklahoma City & Southeastern Railroad Co.	14,437 95	
" Amount expended for sundry surveys and option on depot grounds	20,010 48	
" Balance	4,038,749 54	
	$4,412,376 33	$4,412,376 33
By Balance at credit, June 30, 1904		$4,038,749 54

CLASSIFICATION OF FREIGHT TONNAGE OF THE SYSTEM FOR YEAR ENDED JUNE 30, 1904, AND COMPARISON WITH PREVIOUS YEAR.

2000 Pounds One Ton.	1904. Tons.	1904. Per cent. of total tonnage.	1903. Tons.	1903. Per cent. of total tonnage.
Products of Agriculture:				
Corn	206,561.9		220,384	
Wheat	385,641.9		481,439.5	
Other Grain	108,978.9		124,546.4	
Total Grain	701,182.7		926,369.9	
Flour	300,358.2		287,002.7	
Other Mill Products	123,667.7		123,504.3	
Hay	203,065.7		201,906.8	
Tobacco	280		.....	
Cotton	169.925		165,507.8	

Fruit and Vegetables	144,198.1		153,506.8	
Cottonseed and its Products	133,690.7		132,080.2	
Total Products of Agriculture	1,776,468.1	15.98	1,989,938.5	19.80
Products of Animals:				
Live-Stock	434,088.2		398,647.6	
Dressed Meats	936.3		.....	
Other Packing-house products	140,362		139,867.7	
Poultry, Game and Fish	15,781.5		9,260.4	
Wool	917.7		432.5	
Hides and Leather	4,783.2		3,848.9	
Total Products of Animals	596,868.9	05.37	552,057.1	05.49
Products of Mines:				
Bituminous Coal	4,015,482.9		3,518,540.6	
Coke	140,491.5		101,880.7	
Ores	182,241.9		198,446.2	
Stone, Sand and other like Articles	443,831.9		316,340.6	
Total Products of Mines	4,782,048.2	43.03	4,135,208.1	41.15
Products of the Forest:				
Lumber	1,768,092.4	15.91	1,379,926.3	13.73
Manufactures:				
Petroleum and other Oils	102,078.5		70,182.8	
Sugar	53,309.6		44,169.4	
Iron, Pig and Bloom	154,508.7		178,424.8	
Iron and Steel Rails	47,686.5		95,109.1	
Other Castings and Machinery	106,652.8		110,310.7	
Bar and Sheet Metal	58,440		81,731.4	
Cement, Brick and Lime	533,696.1		415,317.6	
Agricultural Implements	22,125.5		23,555.8	
Wagons, Carriages, Tools, etc	62,682.8		33,148.5	
Wine, Liquor and Beer	39,187.7		33,372.5	
Household Goods and Furniture	93,030.1		77,135.8	
Total Manufactures	1,283,398.3	11.55	1,162,458.4	11.57
Merchandise	537,133	04.83	474,074.5	04.72
Miscellaneous, other Commodities not mentioned above	370,408.2	03.33	356,268.4	03.54
Total Tonnage, exclusive of Company's Business	11,114,417.1	100	10,049,931.3	100
Company's Business	2,560,527.7	18.72	2,190,701.8	17.90
Total Tonnage, including Company's Business	13,674,944.8		12,240,633.1	
Average Mileage Operated 1904			4,216.87	
Average Mileage Operated 1903			3,675.23	

STATEMENT OF GENERAL INCOME ACCOUNT OF THE ST. LOUIS & SAN FRANCISCO RAILROAD SYSTEM, INCLUDING THE CHICAGO & EASTERN ILLINOIS RAILROAD CO., FOR THE FISCAL YEAR ENDED JUNE 30, 1904.

	St. L. & S. F. R. R. System.	C. & E. I. R. R. Co.	Total.
Average Mileage	4,216.87	751.59	4,968.46
Operating Ratio	66.02	62.80	65.23
Gross Earnings from Operation	$26,896,731 29	$8,664,042 80	$35,560,774 09
Operating Expenses	17,756,251 99	5,441,433 47	23,197,685 46
Net Earnings from Operation	$9,140,479 30	$3,222,609 33	$12,363,088 63
Add—			
Miscellaneous Income	39,660 69	355,541 95	395,202 64
Dividends on C. & E. I. R. R. Co. Stock	823,418 00	.....	823,418 00
Land Department Receipts	20,033 93	.....	20,033 93
Total Net Income	$10,023,591 92	$3,578,151 28	$13,601,743 20
Less—			
Interest on Funded Debt and Equipment Notes	$4,326,414 05	$1,356,778 10	$5,683,192 15
Rental of Leased Lines (K. C., F. S. & M. Ry.)	2,831,891 19	.....	2,831,891 19
Taxes	464,799 84	250,500 00	715,299 84
Rental of Tracks and Terminals	93,613 15	225,654 95	319,268 10
Extraordinary Expense Account Flood June, 1904	61,815 06	.....	61,815 06
Dividends Nos. 4, 5, 6 and 7 on Preferred and 3 and 4 on Common Stock Trust Certificates, C. & E. I. R. R. Co.	964,702 00	.....	964,702 00
Total Interest and other charges	$8,743,235 29	$1,832,933 05	$10,576,168 34
Surplus—applicable to dividends	$1,280,356 63	$1,745,218 23	$3,025,574 86
Out of which the following dividends were paid:			
4 per cent. each on First and Second Preferred Stock, $199,742.12 and $640,000, respectively	$839,742 12	.....	$839,742 12
6 per cent. on C. & E. I. R. R. Co. Preferred and 8 per cent. on Common Stock, $409,842 and $577,424, respectively	.....	$987,266 00	987,266 00
Total Dividends	$839,742 12	$987,266 00	$1,827,008 12
Balance	$440,614 51	$757,952 23	$1,198,566 74
Out of which was appropriated for betterments	16,718 83	400,121 02	416,839 85
Surplus carried to credit of Profit and Loss	$423,895 68	$357,831 21	$781,726 89

A comparison of the various classes of earnings and operating expenses with those of the preceding year is as follows:

Gross Earnings.	1904.	1903.	Increase or *decrease.	Per cent. of increase or *decrease.
Freight	$18,776,231 27	$17,398,876 18	$1,377,355 09	7.92
Passenger	5,982,083 13	4,885,163 17	1,096,919 96	22.45
Mail	620,320 26	530,969 02	89,351 24	16.83
Express	762,469 28	630,336 39	132,132 89	20.96
Miscellaneous	755,627 35	844,165 67	*88,538 32	*10.49
Total Earnings from Operation	$26,896,731 29	$24,289,510 43	$2,607,220 86	10.73

The decrease in Miscellaneous Earnings was by reason of switching charges collected having been credited to Switching Expenses during the fiscal year instead of to Miscellaneous Earnings, as was the case in preceding year.

The gross earnings per mile of road operated in 1904 were $6378.36, as against $6608.98 in preceding year, a decrease of $230.62, or 3.49 per cent.

This decrease is due to the added new mileage, which extends through a comparatively undeveloped territory, but which is now being rapidly settled.

Operating Expenses.	1904.	1903.	Increase or *decrease.	Per cent. of increase or *decrease.
Maintenance of Road and Structures	$3,131,141 18	$3,438,839 62	*$307,698 44	*8.95
Maintenance of Equipment	3,414,327 59	2,613,160 62	801,166 97	30.66
Transportation and Traffic	10,310,041 95	9,019,253 73	1,290,788 22	14.31
General Expenses	900,741 27	804,722 81	96,018 46	11.93
Total Operating Expenses	$17,756,251 99	$15,875,976 78	$1,880,275 21	11.84

The Net Earnings increased $726,945.65, or 8.64 per cent.

The following are the percentages of the different Operating Expense Accounts to Earnings and comparison with preceding year:

	1904. Per cent.	1903. Per cent.
Maintenance of Road and Structures	11.64	14.16
Maintenance of Equipment	12.69	10.76
Transportation and Traffic	38.33	37.13
General Expenses	3.35	3.31
Total	66.01	65.36

The following are the Operating Expenses per mile of road and comparison with preceding year:

	1904.	1903.
Maintenance of Road and Structures	$742 53	$935 68
Maintenance of Equipment	809 68	711 02
Transportation and Traffic	2,444 95	2,454 06
General Expenses	213 60	218 96
Total	$4,210 76	$4,319 72

The decrease in Operating Expenses per mile was $108.96, or 2.52 per cent.

CONDENSED GENERAL BALANCE SHEET, INCLUDING THE CHICAGO & EASTERN ILLINOIS RAILROAD CO., AT JUNE 30, 1904.

Assets.	St. L. & S. F. R. R. Co.	C. & E. I. R. R. Co.	Total.
To Franchises and Property	$137,535,072 58	$42,210,205 27	$179,745,277 85
" Stocks and Bonds Owned	3,082,018 53	.....	3,082,018 53
Total Franchises and Property	$140,617,091 11	$42,210,205 27	$182,827,296 38
" Leasehold Estate (the K. C., F. S. & M. Ry.)	$64,529,265 45	.....	$64,529,265 45
" Franchises and Property, Auxiliary Companies	33,600,660 37	.....	33,600,660 37
" C. & E. I. R. R. Co. Preferred Stock, Cost of	6,291,550 00	.....	6,291,550 00
" C. & E. I. R. R. Co. Common Stock, Cost of	18,239,237 13	.....	18,239,237 13
" New Equipment purchased under Equipment Trusts	5,242,707 75	.....	5,242,707 75
" Refunding Mortgage 4 Per Cent. Bonds in Trust with Continental Trust Co. of New York (see contra)	200,000 00	.....	200,000 00
" Mississippi Valley Trust Co., for deposit by Special Master in Chancery for Kansas Midland Railway (see contra)	291 07	.....	291 07
" Current Assets:			
Cash in Treasury	$1,160,538 95	$869,435 24	$2,029,974 19
Cash in Trust Companies for Coupons and Sinking Funds	1,559,787 66	.....	1,559,787 66
Due from Agents and Conductors	1,093,546 49	535,486 61	1,629,033 10
Due from Railroad Companies Account Traffic	182,335 10	232,669 67	415,004 77
Due from Companies and Individuals	2,316,079 11	2,122,744 04	4,438,823 15
Due from United States Government	165,884 05	27,297 73	193,181 78
Supplies on hand	2,178,745 55	723,243 22	2,901,988 77
Unadjusted Open Accounts (balance)	195,763 56	.....	195,763 56
Securities in Treasury, Cost of	13,164,661 13	1,000,000 00	14,164,661 13
Other Investments, including Terminal Grounds and Buildings in Chicago	.....	1,228,649 99	1,228,649 99
Advances Account Roads under Construction	306,887 68	.....	306,887 68
Total Current Assets	$22,324,229 28	$6,739,526 50	$29,063,755 78
" Trustees' Sinking Funds Accounts	$1,160,574 03	.....	$1,160,574 03
" Sinking Funds	204,719 38	696,827 60	901,546 98
" Old Colony Trust Co. Improvement Fund	100,000 00	.....	100,000 00
Total Assets	$292,510,325 57	$49,646,559 37	$342,156,884 94

Liabilities.	St. L. & S. F. R. R. Co.	C. & E. I. R. R. Co.	Total.
By Capital Stock:			
First Preferred	$5,000,000 00	$6,830,700 00	$11,830,700 00
Second Preferred	16,000,000 00	.....	16,000,000 00
Common	29,000,000 00	7,217,800 00	36,217,800 00
" Funded Debt	88,309,033 71	27,453,000 00	115,762,033 71
" Guaranteed Preferred Stock St. L., S. F. & N. O. R. R	40,200 00	.....	40,200 00
Total Capital Stock and Bonds	$138,349,233 71	$41,501,500 00	$179,850,733 71
" Outstanding Securities on Leasehold Estate (the K. C., F. S. & M. Ry.):			
Stocks:			
Preferred Certificates	$13,510,000 00	.....	$13,510,000 00
Common	*15,000,000 00	.....	15,000,000 00
Funded Debt and Equipment Notes	36,572,510 00	.....	36,572,510 00
Total Outstanding Securities on Leasehold Estate (the K. C., F. S. & M. Ry.)	$65,082,510 00	.....	$65,082,510 00
" Capital Stock, Auxiliary Companies	*$14,382,700 00	.....	$14,382,700 00
" Funded Debt, Auxiliary Companies	†19,279,920 00	.....	19,279,920 00
Total Capital Stock and Bonds, Auxiliary Companies	$33,662,620 00	.....	$33,662,620 00
" Preferred Stock Trust Certificates, C. & E. I. R. R	$6,287,550 00	.....	$6,287,550 00
" Common Stock Trust Certificates, C. & E. I. R. R	18,044,500 00	.....	18,044,500 00
" Equipment Notes Outstanding	5,566,847 81	$2,547,636 48	8,114,481 29
" Refunding Mortgage 4 Per Cent. Bonds, Northwestern Division Improvement and Equipment Fund (see contra)	200,000 00	.....	200,000 00
" Special Master Kansas Midland Railway (see contra)	291 07	.....	291 07
" Five Per Cent. Notes, due April 30, 1906	3,500,000 00	.....	3,500,000 00
" Deferred Payments—O. & C. C. Ry	1,980,000 00	.....	1,980,000 00
" Deferred Payments—A. V. & W. Ry	3,600,000 00	.....	3,600,000 00
" Current Liabilities:			
Notes Payable	$2,690,000 00	$650,000 00	$3,340,000 00
Audited Vouchers and Pay-Rolls	4,335,025 01	985,198 30	5,320,223 31
Due to Companies and Individuals	847,535 56	52,897 44	900,433 00
Due to R. R. Companies Account Traffic	238,073 12	.....	238,073 12
Dividends due and uncalled for	.....	463,838 00	463,838 00
Interest on Bonds, Matured	1,640,399 80	35,505 00	1,675,904 80
Interest on Bonds, Accrued (not due)	944,873 67	343,785 99	1,288,659 66
Taxes, Accrued (not due)	219,129 40	31,785 45	250,914 85
Total Current Liabilities	$10,915,036 56	$2,563,010 18	$13,478,046 74
" Sinking Funds, Accrued	$1,264,987 74	.....	$1,264,987 74
" Kansas City, Osceola & Southern Ry. Interest Fund	5,187 50	.....	5,187 50
" Insurance Fund	.....	$4,909 15	4,909 15
" Improvement Fund (K. C. & M. Ry. & Bridge Co.)	12,811 64	.....	12,811 64
Total Liabilities	$288,471,576 03	$46,617,055 81	$335,088,631 84
" Profit and Loss	4,038,749 54	3,029,503 56	7,068,253 10
Total	$292,510,325 57	$49,646,559 37	$342,156,884 94

Total Mileage at June 30, 1904, St. Louis & San Francisco Railroad System..... 4349.35 miles.
" " " " Chicago & Eastern Illinois Railroad..... 758 "
Grand Total..... 5107.35 miles.

*All owned by this Company.

†$2,920,500 of the Funded Debt of the Auxiliary Companies is owned by this Company, of which $2,182,000 is deposited under the Refunding Mortgage, $399,500 under the K. C., F. S. & M. Ry. Co. Refunding Mortgage, and $339,000 under the Trust Mortgage of 1887.

The Iron and Metal Trades.

The Iron Age in its weekly review says:

"The very great change which has come over the iron market during the past month seems to make it necessary to guard against the use of extravagant expressions in referring to the condition of trade. Reports from all consuming centers indicate a scramble for pig-iron. Commission houses could sell a very large quantity of pig-iron for delivery far into next year if the furnace companies would permit them to do so. The quantity of iron purchased since the buying movement began has been so large as to put the furnace companies into an independent position, and they are not disposed to sell too far ahead, believing that the strength of the market will continue and by holding off they will be able to get higher prices. Conservatism is being preached, and in every direction the danger of marking prices up too rapidly is pointed out, but the opportunity to get higher prices is very tempting.

"The improvement which started with pig-iron is working its way steadily into other lines. Consumers are now paying a premium of 50 cents to $1 a ton on billets and sheet bars over the agreed price. The buying of tubes and wire is phenomenal, while sheets also are very strong. A further decided improvement has occurred in plates and structural material. The movement in structural material has been somewhat slow, but it is now showing a much better condition.

"The steel-rail trade is looking up. The Louisville & Nashville Railroad Co. has placed an order with the Tennessee Coal, Iron & Railroad Co. for 50,000 tons for delivery next year. The Tennessee Company is not a member of the Rail Association, but is co-operating closely with it. The fact is not so stated, but it is believed that this contract has been taken subject to the price which may be made by the associated railmakers. No time has yet been announced for the rail meeting, but this is not regarded with so keen an interest as some time since, because every day now strengthens the situation, and if any reduction is made in the price of rails it is more likely to be done as a matter of policy than of necessity. While the mills in the association are not booking large orders, so far as can be ascertained, they are receiving numerous small orders.

"Light rails, which were selling at very low prices recently under the stress of sharp competition, have scored a moderate advance, as the mills are much better supplied with work.

"The tube manufacturers have made another advance of $2 per ton on merchant pipe, effective November 1. This is the second advance of $2 per ton in two weeks.

"Old material is rising in price in sympathy with the upward movement in pig-iron. A particularly sharp advance has been made in old iron rails. Consumers are disturbed by the higher prices now being asked on scrap material, as costs of production are thereby raised, while they fear it may be difficult to secure anything like a corresponding advance in the price of the finished product."

Jerome Zeggio, secretary of the Royal Italian Commission to the World's Fair, writes to the Manufacturers' Record from 5148 Morgan street, St. Louis, that he desires to represent as sole agent in Italy American firms desiring to export to that country. He proposes to open at Milan a permanent display of samples furnished him by American manufacturers, and to push the sale of the products through wholesale houses.

New industrial plants involving an expenditure of nearly $300,000 are nearing completicion at Chattanooga and in its vicinity.

FINANCIAL NEWS

The Manufacturers' Record invites information about Southern financial matters, items of news about new institutions, dividends declared, securities to be issued, openings for new banks, and general discussions of financial subjects bearing upon Southern matters.

Review of the Baltimore Market.

Office Manufacturers' Record,
Baltimore, Md., November 2.

A fair amount of business was transacted in the Baltimore stock market during the past week, but the dealings were not marked by any violent fluctuation of prices, and steadiness was the rule. Of late United Railways, Consolidated Gas, Seaboards, Cotton Duck, G.-B.-S. Breweries and Atlantic Coast Line have been comparatively dull, but interest has reawakened in bank and trust-company stocks, and the demand for investment securities generally is good.

In the trading United Railways common sold from 8 to 7¼, the incomes from 46 down to 44⅜, reacting to 44⅝; the 4s from 91½ to 90¾, reacting to 91¼, with last sale at 91⅛. United Light & Power preferred changed hands at 38 to 36¾, the 4½s at 95¾ and ex-coupon at 93½. Consolidated Gas went from 82¾ to 82, reacting to 82½; the 6s sold at 110¾ and 111, and the 5s at 116; Seaboard common from 16⅛ to 16⅝, reacting to 16, with last sale at 16¼; the preferred from 33 to 34¼, reacting to 33¼, with last sale at 33⅝; the 4s were dealt in at 81⅜ to 82, and the 10-year 5s at 103⅞ and 104, and ex-coupon at 101¾ and 101½; the 3-year 5s at 97¾ to 98½; Cotton Duck common at 5, and the 5s at 67½ to 68⅜; G.-B.-S. common from 7 down to 6¼, the incomes at 26½ and 26¼, and ex-coupon at 24½ to 23½, the 1sts at 54½ to 54¼.

Bank stocks were traded in as follows: Commerce, 25; Baltimore, 119; Farmers and Merchants' 57 and 57½; Calvert, 58; Merchants', 170; Union, 117½. Trust-company stocks figured in the dealings as follows: Continental, 125; Colonial, 39; Union, 40 and 42; Baltimore Trust, 295 to 300; Mercantile, 155. Fidelity & Deposit sold at 146, and Maryland Casualty at 53.

Other securities traded in were as follows: Atlantic Coast Line, 138½ to 141, reacting to 139; do. Consolidated 4s, 98½ to 98⅞; do. new 4s, certificates, 90; do. 4s (South Carolina), 102; Northern Central stock, 94¼ to 99½; Norfolk Railway & Light stock, 10 to 10½; Baltimore City Passenger 5s, 108½; Charleston Consolidated Electric 5s, 87 and 87¼; Virginia Electric & Development 5s, 95¼ to 97; Alabama Consolidated Coal & Iron preferred, 64 to 65; do. 5s, 78½ to 79; Anacostia & Potomac 5s, 103¾; Richmond Traction 5s, 103½; Maryland Telephone 5s, 91½ to 91; Baltimore City 5s, 1916, 119½; Coal & Iron Railway 5s, 106; City & Suburban 5s (D. C.), 105; Lexington Street Railway 5s, 103 and 103¼; Baltimore City 3½s, 1940, 113¾; Georgia Southern & Florida 5s, 114⅝; Virginia Century, 97; Metropolitan Street Railway 5s (Washington), 117⅛ and 117¼; City & Suburban 5s (Baltimore), 114⅝; International Mercantile Marine common, 8; German-American Fire, 25; Baltimore & Ohio stock, 94½; Charleston & West Carolina 5s, 112; Georgia & Alabama Consolidated 5s, 109½ to 109¾; Baltimore City Passenger 4½s, 107; North Carolina 4s, 102½ and 103⅛; Silver Springs, Ocala & Gulf 4s, 98¾; Western Maryland new 4s, 87⅝; Wilmington, Columbia & Augusta 5s, 111; Portsmouth (Va.) 5s, 107½; Canton Company, 90; South Bound 5s, 110½; Atlanta Street Railway 5s, 107¼; Lexington Street Railway 5s, 103; City of Norfolk 5s, 111.

SECURITIES AT BALTIMORE.

Last Quotations for the Week Ended November 2, 1904.

Railroad Stocks.	Par.	Bid.	Asked.
Atlantic Coast Line	100	139	140½
Atlantic Coast Line of Conn.	100	295	300
Georgia Southern & Florida	100	25	35
Georgia Sou. & Fla. 2d Pref.	100	63	70
Norfolk Railway & Light	25	9	10⅜
Seaboard Railway Common	100	16¼	16¾
Seaboard Railway Preferred	100	33⅜	33⅝
United Railways & Elec. Co.	50	7⅛	7½
Bank Stocks.			
Citizens' National Bank	10	28	29
Drovers & Mech. Nat. Bank	100	335	400
Farmers & Mer. Nat. Bank	40	57	60
First National Bank	100	140	145
German-American Bank	100	106	...
German Bank	100	105	...
Merchants' National Bank	100	170	...
National Bank of Baltimore	100	119	...
National Bank of Commerce	15	26	...
National Exchange Bank	100	189½	190
National Howard Bank	10	11	12
National Marine Bank	30	36	37¼
National Mechanics' Bank	10	...	29
National Union Bank of Md.	100	117	125
Second National Bank	100	182	...
Western National Bank	20	...	41
Trust, Fidelity and Casualty Stocks.			
American Bonding & Trust	50	...	37½
Baltimore Trust & Guarantee	100	249½	300
Colonial Trust	50	29	32
Continental Trust	100	120	130
Fidelity & Deposit	50	144	150
International Trust	100	115	120
Maryland Casualty	25	52	55
Mercantile Trust & Deposit	50	150	160
Union Trust	50	40	42½
U. S. Fidelity & Guaranty	100	...	108
Miscellaneous Stocks.			
Alabama Con. Coal & Iron	100	17	18½
Ala. Con. Coal & Iron Pref.	100	...	65
Consolidated Gas	100	82¼	82½
Consolidation Coal	100	...	71
Cotton Duck Voting Trust	100	4½	5¼
G. B. & S. Brewing Co.	100	5½	7
George's Creek Coal	100	72½	80
United Elec. L. & P. Pref.	50	...	36¾
Railroad Bonds.			
Albany & Northern 5s, 1946		93½	95
Atlanta & Charlotte 1st 7s, 1907		...	110
Atlan. Coast Line 1st Con. 4s, 1952		98¼	98⅝
Atlantic Coast Line 4s, Ctfs., 1952		...	90½
Atlantic Coast Line (Conn.) 5s		117	120
Atlantic Coast Line (Conn.) 4s		96	...
Atlan. Coast Line (S. C.) 4s, 1948		102	...
Charleston & West. Car. 5s, 1946		112	112½
Coal & Iron Railway 5s, 1920		106	106¾
Florida Southern 4s, 1940		95	95¾
Georgia & Alabama 5s, 1945		109⅝	109¾
Georgia & Ala. Terminal 5s, 1948		109½	112½
Georgia, Car. & North. 1st 5s, 1929		110¾	112
Georgia South. & Fla. 1st 5s, 1945		114½	115½
Maryland & Pennsylvania 4s, 1951		...	93
Raleigh & Augusta 1st 6s, 1926		122	125
Savannah, Fla. & West. 5s, 1934		112½	...
Seaboard Air Line 4s, 1950		81⅞	82
Seaboard Air Line 5s, 10-year, 1911		101⅝	101¾
Seaboard Air Line 5s, 3-year		98	98¼
Seaboard & Roanoke 5s, 1926		111½	112
Silver Sprgs., Ocala & Gulf 4s, 1918		99	...
South Bound 5s, 1941		110¼	...
Virginia Midland 5th 5s, 1926		112	...
Western Maryland new 4s, 1952		87¾	88½
West Virginia Central 1st 6s, 1911		112	112½
Wilmington, Col. & Aug. 6s, 1910		108¾	112
Street Railway Bonds.			
Anacostia & Potomac 5s, 1949		103½	104
Atlanta Con. St. Rwy. 5s		107½	107½
Augusta Rwy. & Elec. 5s, 1940		103½	106
Baltimore Traction 1st 5s, 1929		112	...
Baltimore Traction Conv. 5s, 1906		102	...
Charleston City Railway 5s, 1923		106	...
Charleston Con. Electric 5s, 1939		86½	90
Citizens' R., L. & P. of N. N. 5s		79	82½
City & Suburban 5s (Wash.) 1948		104½	105½
Knoxville Traction 1st 5s, 1928		...	105
Lexington Railway 1st 5s, 1949		103¼	105
Macon Rwy. & Lt. 1st Con. 5s, 1953		91	92
Metropolitan 5s (Wash.), 1925		117⅛	118
Newport News & Old Pt. 5s, 1938		...	90
Norfolk Railway & Light 5s		...	90
Norfolk Street Railway 5s, 1944		107	108
Richmond Traction 5s		103	104
United Railways 1st 4s, 1949		91	91⅛
United Railways Inc. 4s, 1949		44⅝	44¾
Virginia Electric R. & D. 5s		96	97
Miscellaneous Bonds.			
Alabama Consol. Coal & Iron 5s		...	77½
Consolidated Gas 6s, 1910		...	111
Consolidated Gas 5s, 1939		116½	...
G. B. & S. Brewing 1st 3-4s		54⅝	54⅜
G. B. & S. Brewing 2d Incomes		23¾	25
Maryland Telephone 5s		91	91½
Mt. V. & Woodb'y Cot. Duck 5s		68¼	68⅜
Mt. V. & Woodb'y Cot. Duck Inc.		17½	19
United Elec. Light & Power 4½s		93½	93¾

The Chester County Bank, capital $25,000, is about to begin business at Henderson, Tenn., with the following officers: S. B. Gannaway, president; M. L. McCollum, vice-president; E. F. Boon, cashier, and Thomas Harwell, assistant cashier; directors, A. M. St. John, W. M. Bray, A. E. Estes, Thomas Harwell, W. H. Thomas, E. F. Boon, Silas Smith and J. E. Rowsey.

W. D. Hume is reported to be organizing the Travelers' National Bank at Dallas, Texas.

The First National Bank of Fort Valley, Ga., which is a conversion of the Dow-Law Bank, a private institution, has been incorporated. The officers are W. H. Harris, president; S. H. Rumph of Marshallville, Ga., vice-president, and J. C. McDonald, cashier; directors, Louis L. Brown, W. H. Harris, O. G. Singleton, S. H. Rumph and W. H. Hollinshead.

The Manufacturers' Record is informed that the Bank of Watauga County will begin business at Boone, N. C., about November 15 with the following officers: N. L. Most, president; N. C. Coffey, vice-president, and E. S. Coffey, cashier.

The Oconee County Bank, recently chartered at Watkinsville, Ga., with $25,000 capital, has begun business with R. M. Jackson as president, and M. M. Stephenson, cashier.

Clarksdale, Miss.—Bids will be received at not less than par until 10 A. M. December 1 for $500,000 of 4 per cent. 25-50-year Yazoo-Mississippi Delta levee bonds. Address Hon. W. S. Barry, president board of levee commissioners, Clarksdale.

[For Additional Financial News, See Pages 38 and 39.]

TABLE OF CONTENTS.

EDITORIAL: Page.
Power of Publicity ... 373
Southern Railroad Mileage ... 373
A Mississippi Exhibit ... 373
Baltimore's Clearings Ahead of 1903 ... 373
The Manufacturers' Record as a Harvest Field ... 373
Southern Mills and Their Operatives ... 374
Vagrants Must Move On ... 374
For Immigration ... 374
A Belated Chicken Come Home to Roost. 374

A $1,350,000 Electric Plant ... 375
A $700,000 Water-Power Plant ... 375
Reasons for New England's Industrial Growth—III ... 375
Minerals of Alabama ... 376
A Phase of Southern Educationism ... 377
High Temperatures in Carding and Spinning Rooms ... 378
Tube Wells in Drought ... 379
Mining in Union County, N. C. ... 379
Handling of Cotton ... 379
Pig-Iron in Germany ... 380
The Pig-Iron Market ... 380
Alabama Steel & Wire Co.'s Plant ... 380
Looks Like $15 Iron at Birmingham ... 380
Water-Power Near Belton, S. C. ... 380
Fort Worth's Big Flour Mill ... 380
Oil Rights Acquired ... 380
Wants American Manufactures ... 380
Want Cheap Sewing Machines ... 380
Wants Pitchfork Handles ... 380
The Internal-Combustion Locomotive (Illustrated) ... 381
Natural Gas in Sugar-Making ... 382
For Rivers and Harbors ... 382
Individual Exhibits at St. Louis (Illus.) ... 382
Italian Immigrants ... 385
Wants Special Southern Brick ... 386
American Machinery Wanted in Italy ... 386
Wants a Water-Power ... 386

RAILROADS:
Frisco System Report ... 386
Jacksonville Terminal ... 386
Coal River & Western ... 386
Louisiana & Arkansas ... 386
Duluth to Galveston ... 386
A New Coal Road ... 387
New Orleans to St. Bernard ... 387
Kansas-Oklahoma Interurban ... 387
A Railroad Deal ... 387
Natchez & Gulf ... 387
Augusta & Florida ... 387
Railroad Notes ... 387

TEXTILES:
The Dan River Mills ... 387
The Bellevue Mill ... 387
The Cotton Movement ... 387
Textile Notes ... 387
Quotations of Cotton Yarns ... 387

MECHANICAL:
The Friestedt Interlocking Channel Bar for Caisson Construction (Illus.) ... 388
The Lane Joist Hanger (Illus.) ... 389
Tallest Sand-Lime Brick Building (Ill.) 389
Direct-Connected Electric Elevator (Ill.) 389
A Query for Boiler Experts ... 389
Foundry and Machine Shop Needed ... 389
Want Agencies in Panama ... 389

CONSTRUCTION DEPARTMENT:
Baltimore Building Notes ... 390
New Enterprises ... 391
Building Notes ... 393
Railroad Construction ... 394
Machinery Wanted ... 394
Mexico ... 395
Industrial News of Interest ... 396
Trade Literature ... 396
Lumber Notes ... 397
The Iron and Metal Trades ... 402

FINANCIAL NEWS:
Review of the Baltimore Market ... 402
Securities at Baltimore ... 402
Maryland Bankers ... 38
New Corporations ... 38
New Securities ... 38
Financial Notes ... 39
For Combining Energies ... 39
Mississippi Property Values ... 39

ge.
373
373
373
373

373
374
374
374
374

375
375

375
376
377

378
379
379
379
380
380
380
380
380
380
380
380
380
380

381
382
382
382
385
386
386
386

386
386
386
386
386
387
387
387
387
387
387
387

. 387
. 387
. 387
. 387
. 387

. 388
. 389
. 389
. 389
. 389
. 389
. 389

. 390
. 391
. 393
. 391
. 394
. 395
. 396
. 396
. 397
. 402

. 402
. 402
. 38
. 38
. 38
. 39
. 39
. 39

---

vice-

ntly
$25.-
n R.
Ste-

eived
cem-
5-50-
onds.
dent
dale.

See